
**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

North American Electric Reliability Corporation)
)

Docket No. _____

**PETITION OF THE
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION
FOR APPROVAL OF RELIABILITY STANDARDS DEVELOPED UNDER THE
STANDARDS ALIGNMENT WITH REGISTRATION PROJECT**

Lauren A. Perotti
Senior Counsel
Marisa Hecht
Counsel
North American Electric Reliability Corporation
1325 G Street, N.W., Suite 600
Washington, D.C. 20005
(202) 400-3000
(202) 644-8099 – facsimile
lauren.perotti@nerc.net

*Counsel for the North American Electric
Reliability Corporation*

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The proposed Reliability Standards revise the currently effective versions to align the standards with registration changes approved by the Commission in 2015.⁴ In the proposed Reliability Standards, references to entities that are no longer registered by NERC are removed. Proposed Reliability Standard PRC-006-3 adds the Underfrequency Load Shedding (“UFLS”)-Only Distribution Provider as an applicable entity. In addition, revisions are proposed to ensure consistent use of the term Planning Coordinator across the body of NERC Reliability Standards. No substantive revisions are made to the underlying requirements.

NERC requests that the Commission approve the proposed Reliability Standards, as shown in **Exhibit A**, as just, reasonable, not unduly discriminatory or preferential, and in the public interest. NERC requests that the Commission also approve: (i) the implementation plan (**Exhibit B**); (ii) the associated Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) (**Exhibit D**), which are generally unchanged from the currently effective versions of those standards; and (iii) the retirement of the currently effective versions of the proposed Reliability Standards.

As required by Section 39.5(a)⁵ of the Commission’s regulations, this petition presents the technical basis and purpose of the proposed Reliability Standards, a demonstration that the proposed Reliability Standards continue to meet the criteria identified by the Commission in Order No. 672⁶ (**Exhibit C**), and a summary of the standard development history (**Exhibit E**). The NERC Board of Trustees adopted the proposed Reliability Standards on February 6, 2020.

⁴ See *infra* Section II.C.

⁵ 18 C.F.R. § 39.5(a).

⁶ The Commission specified in Order No. 672 certain general factors it would consider when assessing whether a particular Reliability Standard is just and reasonable. See *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, 114 FERC ¶ 61,104 at PP 321-37 (2006) [hereinafter Order No. 672], *order on reh’g*, Order No. 672-A, 114 FERC ¶ 61,328 (2006).

This petition is organized as follows: Section I of the petition provides the individuals to whom notices and communications related to the filing should be provided. Section II provides background on the regulatory structure governing the Reliability Standards approval process. This section also provides information on the registration changes, developed under NERC's Risk-Based Registration Initiative and approved by the Commission in 2015, which led to the development of the proposed standards. Section III of the petition provides the procedural history for each of the proposed Reliability Standards, a summary of the proposed revisions, and the justification supporting the proposals. Section IV of the petition provides a summary of the proposed implementation plan.

I. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to the following:⁷

Lauren A. Perotti*
Senior Counsel
Marisa Hecht*
Counsel
North American Electric Reliability
Corporation
1325 G Street, N.W., Suite 600
Washington, D.C. 20005
(202) 400-3000
(202) 644-8099 – facsimile
lauren.perotti@nerc.net
marisa.hecht@nerc.net

Howard Gugel*
Vice President and Director of Engineering and Standards
North American Electric Reliability Corporation
3353 Peachtree Road, N.E.
Suite 600, North Tower
Atlanta, GA 30326
(404) 446-2560
(404) 446-2595 – facsimile
howard.gugel@nerc.net

II. BACKGROUND

A. Regulatory Framework

By enacting the Energy Policy Act of 2005,⁸ Congress entrusted the Commission with the duties of approving and enforcing rules to ensure the reliability of the Bulk-Power System (“BPS”), and with the duties of certifying an ERO that would be charged with developing and enforcing mandatory Reliability Standards, subject to Commission approval. Section 215(b)(1)⁹ of the FPA states that all users, owners, and operators of the BPS in the United States will be subject to Commission-approved Reliability Standards. Section 215(d)(5)¹⁰ of the FPA authorizes the Commission to order the ERO to submit a new or modified Reliability Standard. Section 39.5(a)¹¹ of the Commission’s regulations requires the ERO to file with the Commission for its

⁷ Persons to be included on the Commission’s service list are identified by an asterisk. NERC respectfully requests a waiver of Rule 203 of the Commission’s regulations, 18 C.F.R. § 385.203, to allow the inclusion of more than two persons on the service list in this proceeding.

⁸ 16 U.S.C. § 824o.

⁹ *Id.* § 824o(b)(1).

¹⁰ *Id.* § 824o(d)(5).

¹¹ 18 C.F.R. § 39.5(a).

approval each new Reliability Standard that the ERO proposes should become mandatory and enforceable in the United States, and each modification to a Reliability Standard that the ERO proposes should be made effective.

The Commission is vested with the regulatory responsibility to approve Reliability Standards that protect the reliability of the BPS and to ensure that Reliability Standards are just, reasonable, not unduly discriminatory or preferential, and in the public interest. Pursuant to Section 215(d)(2) of the FPA¹² and Section 39.5(c)¹³ of the Commission's regulations, the Commission will give due weight to the technical expertise of the ERO with respect to the content of a Reliability Standard.

B. NERC Reliability Standards Development Procedure

The proposed Reliability Standards discussed in this petition were developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process. NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC Standard Processes Manual.¹⁴

In its order certifying NERC as the Commission's ERO, the Commission found that NERC's rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards,¹⁵ and thus satisfy several of the Commission's criteria for approving Reliability Standards.¹⁶ The development process is

¹² 16 U.S.C. § 824o(d)(2).

¹³ 18 C.F.R. § 39.5(c)(1).

¹⁴ The NERC Rules of Procedure, including Appendix 3A, NERC Standard Processes Manual, is available at <https://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx>.

¹⁵ *N. Am. Elec. Reliability Corp.*, 116 FERC ¶ 61,062 at P 250.

¹⁶ Order No. 672, *supra* note 6, at PP 268, 270.

open to any person or entity with a legitimate interest in the reliability of the BPS. NERC considers the comments of all stakeholders. Stakeholders must approve, and the NERC Board of Trustees must adopt, a new or revised Reliability Standard before NERC submits the Reliability Standard to the Commission for approval. Similarly, stakeholders and the NERC Board of Trustees must approve the retirement of a Reliability Standard before the retirement is submitted to the Commission for approval.

C. NERC's Risk-Based Registration Initiative and Project 2017-07 Standards Alignment with Registration

On March 19, 2015, the Commission approved a series of proposed Rules of Procedure revisions to implement the NERC Risk-Based Registration Initiative.¹⁷ The Commission approved the removal of two functional categories, Purchasing-Selling Entity and Interchange Authority, from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the Bulk-Power System.¹⁸ The Commission also approved the creation of a new registration category, UFLS-only Distribution Provider, and the risk-based application of sub-set lists of Reliability Standards to the UFLS-only Distribution Provider.¹⁹ Subsequently, following a compliance filing, the Commission approved the removal of the Load-Serving Entity from the NERC registry criteria.²⁰

Several projects have either already addressed, or will address, Reliability Standards impacted by the registration changes approved by the Commission in 2015. NERC initiated Project 2017-07 to address any remaining edits to the Reliability Standards that were needed to align the existing Reliability Standards with the registration changes.

¹⁷ *N. Am. Elec. Reliability Corp.*, Order on Electric Reliability Organization Risk Based Registration Initiative and Requiring Compliance Filing, 150 FERC ¶ 61,213 (2015).

¹⁸ *Id.* at PP 25-26.

¹⁹ *Id.* at PP 52-53.

²⁰ *N. Am. Elec. Reliability Corp.*, Order on Compliance Filing, 153 FERC ¶ 61,024 at P 24 (2015).

The proposed Reliability Standards were posted for formal comment and ballot from October 29, 2019 to December 12, 2019 and for final ballot from January 14, 2020 to January 23, 2020. Having achieved the requisite quorum and ballot body approval percentages, the NERC Board of Trustees adopted the proposed Reliability Standards on February 6, 2020. A summary of the development history and the complete record of development is attached to this petition as **Exhibit E**.

III. JUSTIFICATION FOR APPROVAL

In this petition, NERC proposes for Commission approval seven revised Reliability Standards:

- Reliability Standard FAC-002-3 – Facility Interconnection Studies
- Reliability Standard IRO-010-3 – Reliability Coordinator Data Specification and Collection
- Reliability Standard MOD-031-3 – Demand and Energy Data
- Reliability Standard MOD-033-2 – Steady-State and Dynamic System Model Validation
- Reliability Standard NUC-001-4 – Nuclear Plant Interface Coordination
- Reliability Standard PRC-006-4 – Automatic Underfrequency Load Shedding
- Reliability Standard TOP-003-4 – Operational Reliability Data

As discussed more fully below, the revisions in the proposed Reliability Standards will align these standards with the previously-approved changes to the NERC registration criteria by removing reference to entities that are no longer registered with NERC. In proposed Reliability Standard PRC-006-4, NERC adds the UFLS-only Distribution Provider as an applicable entity. In two instances, NERC has proposed changes that will promote consistent use of the term Planning Coordinator across the Reliability Standards. Where appropriate, NERC has made corresponding revisions to the VRFs, VSLs, measures, and the supplemental material included as information. No substantive changes are proposed to any Reliability Standard requirement.

The proposed revisions will promote alignment and consistency across NERC Reliability Standards and the NERC registration criteria and will reduce the potential for confusion regarding which entities are responsible for compliance with the standards. For these reasons, the proposed Reliability Standards should be approved as just, reasonable, not unduly discriminatory or preferential, and in the public interest. The following sections provide a brief overview of the procedural history for each standard and a summary of the changes and supporting justification.

A. Proposed Reliability Standard FAC-002-3 – Facility Interconnection Studies

1. Procedural History

The Commission approved the first version of the FAC-002 Reliability Standard, FAC-002-0, in Order No. 693.²¹ Reliability Standard FAC-002-1 was approved by the Commission in 2011.²² Currently effective Reliability Standard FAC-002-2 was approved by the Commission on November 6, 2014.²³

2. Summary of Proposed Revisions

The purpose of proposed Reliability Standard FAC-002-3, which remains unchanged from the currently effective version, is “to study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.” The currently effective standard is applicable to the Planning Coordinator, Transmission Planner, Transmission Owner, Distribution Provider, Generator Owner (including Applicable Generator Owner as defined in the standard), and the Load-Serving Entity. As the Load-Serving Entity is no longer a NERC registration category, NERC proposes to remove this entity from the applicability section of proposed Reliability Standard FAC-002-3 and remove reference to this entity in Requirement R3. This revision aligns

²¹ *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, 118 FERC ¶ 61,218 at P 693 (2007) [hereinafter Order No. 693].

²² *N. Am. Elec. Reliability Corp.*, 134 FERC ¶ 61,015 (2011).

²³ *N. Am. Elec. Reliability Corp.*, Docket No. RD14-12-000 (Nov. 6, 2014) (delegated letter order).

the FAC-002 standard with the NERC registration criteria and reduces the potential for confusion regarding which entities must comply with the standard.

B. Proposed Reliability Standard IRO-010-3 – Reliability Coordinator Data Specification and Collection

1. Procedural History

The Commission approved the first version of the IRO-010 Reliability Standard submitted for Commission approval, Reliability Standard IRO-010-1a, in Order No. 748, issued in 2011.²⁴ The Commission approved currently effective Reliability Standard IRO-010-2 in Order No. 817, issued in 2015.²⁵

2. Summary of Proposed Revisions

The purpose of proposed Reliability Standard IRO-010-3, which remains unchanged from the currently effective version, is “to prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.” The currently effective standard is applicable to the Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Transmission Operator, Transmission Owner, and Distribution Provider. As the Load-Serving Entity is no longer a NERC registration category, NERC proposes to remove this entity from the applicability section of proposed Reliability Standard IRO-010-3 and remove reference to this entity in Requirement R3. As with other standards in which this revision is made, this revision will align the standard with the NERC

²⁴ *Mandatory Reliability Standards for Interconnection Reliability Operating Limits*, Order No. 748, 134 FERC ¶ 61,213 at P 21 (2011) [hereinafter Order No. 748].

²⁵ *Transmission Operations Reliability Standards and Interconnection Reliability Operations and Coordination Reliability Standards*, 153 FERC ¶ 61,178 at P 1 (2015) [hereinafter Order No. 817].

registration criteria and reduce the potential for confusion regarding which entities must comply with the standard.

C. Proposed Reliability Standard MOD-031-3 – Demand and Energy Data

1. Procedural History

The Commission approved the first version of the MOD-031 Reliability Standard, MOD-031-1, in Order No. 804, issued in 2015.²⁶ The Commission approved currently effective Reliability Standard MOD-031-2 in 2016.²⁷

2. Summary of Proposed Revisions

The purpose of proposed Reliability Standard MOD-031-3, which remains unchanged from the currently effective version, is “to provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.” The currently effective standard is applicable to the Planning Authority/Planning Coordinator, Transmission Planner, Balancing Authority, Resource Planner, Load-Serving Entity, and Distribution Provider.

As the Load-Serving Entity is no longer a NERC registration category, NERC proposes to remove this entity from the applicability section of proposed Reliability Standard MOD-031-3 and remove reference to this entity in Requirement R1 Part 1.1, where it is listed as an “Applicable Entity” for purposes of Requirements R2 and R4. Additionally, NERC proposes to strike the term “Planning Authority” from the applicability section of the standard and the explanatory text that follows. The preferred terminology for the responsible entity that coordinates and integrates transmission Facilities and service plans, resource plans, and Protection Systems is Planning

²⁶ *Demand and Energy Data Reliability Standard*, Order No. 804, 150 FERC ¶ 61,109 (2015). Reliability Standard MOD-031-1 was developed to replace a suite of MOD Reliability Standards referred to as the “MOD C” standards originally approved by the Commission in Order No. 693.

²⁷ *N. Am. Elec. Reliability Corp.*, Docket No. RD16-1-000 (Feb. 18, 2016) (delegated letter order).

Coordinator. The proposed changes are intended to promote alignment with the registration criteria, ensure consistency in terminology, and reduce the potential for confusion regarding which entities are responsible for compliance with the standard.

D. Proposed Reliability Standard MOD-033-2 – Steady-State and Dynamic System Model Validation

1. Procedural History

The Commission approved currently effective Reliability Standard MOD-033-1 in 2014.²⁸

2. Summary of Proposed Revisions

The purpose of proposed Reliability Standard MOD-033-2, which remains unchanged from the currently effective version, is “to establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.” The currently effective standard is applicable to the Planning Authority/Planning Coordinator, Reliability Coordinator, and Transmission Operator. In proposed Reliability Standard MOD-033-2, NERC proposes to strike the term “Planning Authority” from the applicability section of the standard and the explanatory text that follows. As noted in the preceding section, the proposed change is intended to promote consistent use of “Planning Coordinator” throughout the Reliability Standards.

E. Proposed Reliability Standard NUC-001-4 – Nuclear Plant Interface Coordination

1. Procedural History

The Commission approved the first version of the NUC-001 Reliability Standard, NUC-

²⁸ *N. Am. Elec. Reliability Corp.*, Docket No. RD14-5-000 (May 1, 2014) (delegated letter order). Reliability Standard MOD-033-1 was developed to replace a suite of MOD Reliability Standards referred to as the “MOD B” standards, two of which were approved by the Commission in Order No. 693 and four of which were later withdrawn by NERC.

001-1, in Order No. 716 issued in 2008.²⁹ Reliability Standard NUC-001-2 was approved by the Commission in 2010.³⁰ The Commission approved the retirement of NUC-001-2 Requirements R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 in Order No. 788, issued in 2013.³¹ The Commission approved currently effective Reliability Standard NUC-001-3 in 2014.³²

2. Summary of Proposed Revisions

The purpose of proposed Reliability Standard NUC-001-4, which remains unchanged from the currently effective version, is as follows: “This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.” The standard is applicable to Nuclear Plant Generator Operators and Transmission Entities, which may include Transmission Operators, Transmission Owners, Transmission Planners, Transmission Service Providers, Balancing Authorities, Reliability Coordinators, Planning Coordinators, Distribution Providers, Load-Serving Entities, Generator Owners, and Generator Operators. As the Load-Serving Entity is no longer a NERC registration category, NERC proposes to remove this entity from the list of applicable Transmission Entities in the applicability section of proposed Reliability Standard NUC-001-4. As with other standards in which this revision is made, this revision will align the standard with the NERC registration

²⁹ *Mandatory Reliability Standard for Nuclear Plant Interface Coordination*, Order No. 716, 125 FERC ¶ 61,065 (2008).

³⁰ *N. Am. Elec. Reliability Corp.*, 130 FERC ¶ 61,051 (2010).

³¹ *Electric Reliability Organization Proposal to Retire Requirements in Reliability Standards*, 145 FERC ¶ 61,147 (2013).

³² *N. Am. Elec. Reliability Corp.*, Docket No. RD14-13-000 (Nov. 4, 2014) (delegated letter order).

criteria and reduce the potential for confusion regarding which entities must comply with the standard.

F. Proposed Reliability Standard PRC-006-4 – Automatic Underfrequency Load Shedding

1. Procedural History

The Commission approved Reliability Standard PRC-006-1 in Order No. 763, issued in 2012.³³ Reliability Standard PRC-006-2 was approved by the Commission in 2015.³⁴ Currently effective Reliability Standard PRC-006-3 added a regional Variance for the Quebec Interconnection; none of the requirements applicable in the United States were changed. The standard was provided to the Commission for information on September 5, 2017.³⁵

2. Summary of Proposed Revisions

The purpose of proposed Reliability Standard PRC-006-4, which remains unchanged from the currently effective version, is “to establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.” The currently effective standard is applicable to Planning Coordinators, “UFLS entities” (which may include Transmission Owners and Distribution Providers that own, operate, or control UFLS equipment), and Transmission Owners that own certain Elements. In proposed Reliability Standard PRC-006-4, NERC proposes to add the UFLS-Only Distribution Provider as an applicable UFLS entity, consistent with the language in Section III(b) of Appendix 5B of the

³³ *Automatic Underfrequency Load Shedding and Load Shedding Plans Reliability Standards*, Order No. 763, 139 FERC ¶ 61,098 (2012). The Commission neither approved nor remanded proposed Reliability Standard PRC-006-0 in Order No. 693. *See* Order No. 693, *supra* note 20, at P 1479.

³⁴ *N. Am. Elec. Reliability Corp.*, Docket No. RD15-2-000 (Mar. 4, 2015) (delegated letter order).

³⁵ *Informational Filing regarding Reliability Standard PRC-006-3 (Automatic Underfrequency Load Shedding)*, Docket No. RD15-2-000 (Sep. 5, 2017).

NERC Rules of Procedure (Statement of Compliance Registry Criteria) that the Reliability Standards applicable to UFLS-Only Distribution Providers includes prior effective versions of the PRC-006 standard.

G. Proposed Reliability Standard TOP-003-4 – Operational Reliability Data

1. Procedural History

The Commission approved the first version of the TOP-003 Reliability Standard, TOP-003-0, in Order No. 693 issued in 2007.³⁶ Reliability Standard TOP-003-1 was approved in Order No. 748, issued in 2011.³⁷ Currently effective Reliability Standard TOP-003-3 was approved by the Commission in Order No. 817, issued in 2015.³⁸

2. Summary of Proposed Revisions

The purpose of proposed Reliability Standard TOP-003-4, which remains unchanged from the currently effective version, is “to ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.” The currently effective standard is applicable to the Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Transmission Owner, and Distribution Provider. As the Load-Serving Entity is no longer a NERC registration category, NERC proposes to remove this entity from the applicability section of proposed Reliability Standard TOP-003-4 and remove reference to this entity in Requirement R5. As with other standards in which this revision is made,

³⁶ Order No. 693, *supra* note 20, at P 1619. Reliability Standard TOP-003-3 replaced proposed version TOP-003-2, which was filed and later withdrawn by NERC.

³⁷ Order No. 748, *supra* note 23, at P 21.

³⁸ Order No. 817, *supra* note 24, at P 1.

this revision will align the standard with the NERC registration criteria and reduce the potential for confusion regarding which entities must comply with the standard.

H. Enforceability of the Proposed Reliability Standards

The proposed Reliability Standards contain Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) for each of the requirements. The VRFs and VSLs provide guidance on the way that NERC will enforce the requirements of the proposed Reliability Standards. The VRFs and VSLs are substantively unchanged from currently effective versions of the Reliability Standards, reflecting only those revisions necessary to effectuate the proposed alignment revisions. As such, they continue to comport with NERC and Commission guidelines related to their assignment.

In addition, the proposed Reliability Standards also include measures that support the requirements by clearly identifying what is required and how the requirement will be enforced. The measures help ensure that the requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party. The measures are substantively unchanged from currently enforceable versions of the Reliability Standards, reflecting only those revisions necessary to effectuate the proposed alignment revisions.

IV. EFFECTIVE DATE

NERC respectfully requests that the Commission approve the proposed implementation plan attached to this petition as **Exhibit B**. The proposed implementation plan provides that the proposed Reliability Standards would become effective on the first day of the first calendar quarter that is three months after applicable regulatory approval. The currently effective versions of the standards would be retired immediately prior to the effective date of the revised Reliability Standards. This implementation timeline reflects consideration that entities may need time to

update their internal systems and documentation to reflect the new Reliability Standard version numbers.

V. CONCLUSION

For the reasons set forth above, NERC respectfully requests that the Commission approve:

- proposed Reliability Standards FAC-002-3, IRO-010-3, MOD-031-3, MOD-033-2, NUC-001-4, PRC-006-4, and TOP-003-4, and the associated elements included in **Exhibit A**;
- the implementation plan included in **Exhibit B**; and
- the retirement of Reliability Standards FAC-002-2, IRO-010-2, MOD-031-2, MOD-033-1, NUC-001-3, PRC-006-3, and TOP-003-3.

Respectfully submitted,

/s/ Lauren A. Perotti

Lauren A. Perotti
Senior Counsel
Marisa Hecht
Counsel
North American Electric Reliability Corporation
1325 G Street, N.W., Suite 600
Washington, D.C. 20005
(202) 400-3000
(202) 644-8099 – facsimile
lauren.perotti@nerc.net

*Counsel for the North American Electric
Reliability Corporation*

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Exhibit A

The Proposed Reliability Standards Developed
Under Project 2017-17 Standards Alignment with Registration

Exhibit A-1

Proposed Reliability Standard FAC-002-3
Clean

A. Introduction

1. **Title:** Facility Interconnection Studies
2. **Number:** FAC-002-3
3. **Purpose:** To study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Transmission Owner
 - 4.1.4 Distribution Provider
 - 4.1.5 Generator Owner
 - 4.1.6 Applicable Generator Owner
 - 4.1.6.1 Generator Owner with a fully executed Agreement to conduct a study on the reliability impact of interconnecting a third party Facility to the Generator Owner's existing Facility that is used to interconnect to the Transmission system.
5. **Effective Date:** See Implementation Plan

B. Requirements and Measures

- R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities. The following shall be studied: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
 - 1.1. The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system(s);
 - 1.2. Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
 - 1.3. Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions; and
 - 1.4. Study assumptions, system performance, alternatives considered, and coordinated recommendations. While these studies may be performed independently, the results shall be evaluated and coordinated by the entities involved.

- M1.** Each Transmission Planner or each Planning Coordinator shall have evidence (such as study reports, including documentation of reliability issues) that it met all requirements in Requirement R1.
- R2.** Each Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** Each Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R2.
- R3.** Each Transmission Owner and each Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Owner and each Distribution Provider shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R3.
- R4.** Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M4.** Each Transmission Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R4.
- R5.** Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M5.** Each applicable Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R5.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Planning Coordinator, Transmission Planner, Transmission Owner, Distribution Provider, Generator Owner and applicable Generator Owner shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for three years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Check

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities, but failed to study one of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study two of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study three of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator failed to study the reliability impact of: interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of, generation, transmission, or electricity end-user Facilities. |
| R2 | Long-term Planning | Medium | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|---|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator. |
| R3 | Long-term Planning | Medium | The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but | The Transmission Owner, or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but | The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed | The Transmission Owner, or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator. |
| R4 | Long-term Planning | Medium | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities. |
| R5 | Long-term Planning | Medium | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning | The applicable Generator Owner failed to coordinate and cooperate on studies with its Transmission Planner |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | or Planning Coordinator regarding requested interconnections to its Facilities. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None

Application Guidelines

Guidelines and Technical Basis

Entities should have documentation to support the technical rationale for determining whether an existing interconnection was “materially modified.” Recognizing that what constitutes a “material modification” will vary from entity to entity, the intent is for this determination to be based on engineering judgment.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | January 13, 2006 | Removed duplication of “Regional Reliability Organizations(s).” | Errata |
| 1 | August 5, 2010 | Modified to address Order No. 693 Directives contained in paragraph 693. Adopted by the NERC Board of Trustees. | Revised |
| 1 | February 7, 2013 | R2 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 1 | November 21, 2013 | R2 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2 | | Revisions to implement the recommendations of the FAC Five-Year Review Team. | Revision under Project 2010-02 |
| 2 | August 14, 2014 | Adopted by the Board of Trustees. | |
| 2 | November 6, 2014 | FERC letter order issued approving FAC-002-2. | |
| 3 | February 6, 2020 | Adopted by NERC Board of Trustees. | Revisions under Project 2017-07 |

Exhibit A-1

Proposed Reliability Standard FAC-002-3
Redline to Last Approved (FAC-002-2)

A. Introduction

1. **Title:** Facility Interconnection Studies
2. **Number:** FAC-002-~~32~~
3. **Purpose:** To study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Transmission Owner
 - 4.1.4 Distribution Provider
 - 4.1.5 Generator Owner
 - 4.1.6 Applicable Generator Owner
 - 4.1.6.1 Generator Owner with a fully executed Agreement to conduct a study on the reliability impact of interconnecting a third party Facility to the Generator Owner’s existing Facility that is used to interconnect to the Transmission system.
 - ~~5.0.0—Load Serving Entity~~
- ~~6.5. **Effective Date:** See Implementation Plan. The first day of the first calendar quarter that is one year after the date that this standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is one year after the date this standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

B. Requirements and Measures

- R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities. The following shall be studied:
[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]
 - 1.1. The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system(s);
 - 1.2. Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
 - 1.3. Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions; and

- 1.4. Study assumptions, system performance, alternatives considered, and coordinated recommendations. While these studies may be performed independently, the results shall be evaluated and coordinated by the entities involved.
- M1.** Each Transmission Planner or each Planning Coordinator shall have evidence (such as study reports, including documentation of reliability issues) that it met all requirements in Requirement R1.
- R2.** Each Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** Each Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R2.
- R3.** Each Transmission Owner, and each Distribution Provider, ~~and each Load-Serving Entity~~ seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Owner, and each Distribution Provider, ~~and each Load-Serving Entity~~ shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R3.
- R4.** Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M4.** Each Transmission Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R4.
- R5.** Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M5.** Each applicable Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R5.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Planning Coordinator, Transmission Planner, Transmission Owner, Distribution Provider, Generator Owner, and applicable Generator Owner, and ~~Load-Serving Entity~~ shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for three years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Check

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|--|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities, but failed to study one of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study two of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study three of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator failed to study the reliability impact of: interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of, generation, transmission, or electricity end-user Facilities. |
| R2 | Long-term Planning | Medium | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, failed to coordinate and cooperate on |

| | | | | | | |
|-----------|--------------------|--------|---|---|---|---|
| | | | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | studies with its Transmission Planner or Planning Coordinator. |
| R3 | Long-term Planning | Medium | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator. |

| | | | | | | |
|------------------|---------------------------|---------------|--|--|--|--|
| <p>R4</p> | <p>Long-term Planning</p> | <p>Medium</p> | <p>The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities.</p> |
| <p>R5</p> | <p>Long-term Planning</p> | <p>Medium</p> | <p>The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The applicable Generator Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None

Application Guidelines

Guidelines and Technical Basis

Entities should have documentation to support the technical rationale for determining whether an existing interconnection was “materially modified.” Recognizing that what constitutes a “material modification” will vary from entity to entity, the intent is for this determination to be based on engineering judgment.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------------|--|--|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | January 13, 2006 | Removed duplication of “Regional Reliability Organizations(s). | Errata |
| 1 | August 5, 2010 | Modified to address Order No. 693 Directives contained in paragraph 693. Adopted by the NERC Board of Trustees. | Revised |
| 1 | February 7, 2013 | R2 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 1 | November 21, 2013 | R2 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2 | | Revisions to implement the recommendations of the FAC Five-Year Review Team. | Revision under Project 2010-02 |
| 2 | August 14, 2014 | Adopted by the Board of Trustees. | |
| 2 | November 6, 2014 | FERC letter order issued approving FAC-002-2. | |
| <u>3</u> | <u>February 6, 2020</u> | <u>Adopted by NERC Board of Trustees.</u> | <u>Revisions under Project 2017-07</u> |

Exhibit A-2

Proposed Reliability Standard IRO-010-3
Clean

A. Introduction

1. **Title:** Reliability Coordinator Data Specification and Collection
2. **Number:** IRO-010-3
3. **Purpose:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
4. **Applicability**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
 - 4.3. Generator Owner.
 - 4.4. Generator Operator.
 - 4.5. Transmission Operator.
 - 4.6. Transmission Owner.
 - 4.7. Distribution Provider.
5. **Effective Date:** See Implementation Plan.

B. Requirements

- R1.** The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*
 - 1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data, as deemed necessary by the Reliability Coordinator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1.** The Reliability Coordinator shall make available its dated, current, in force documented specification for data.
- R2.** The Reliability Coordinator shall distribute its data specification to entities that have data required by the Reliability Coordinator's Operational Planning Analyses, Real-

time monitoring, and Real-time Assessments. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)

- M2.** The Reliability Coordinator shall make available evidence that it has distributed its data specification to entities that have data required by the Reliability Coordinator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. This evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R3.** Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall satisfy the obligations of the documented specifications using: (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations*)
- 3.1** A mutually agreeable format
 - 3.2** A mutually agreeable process for resolving data conflicts
 - 3.3** A mutually agreeable security protocol
- M3.** The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Reliability Coordinator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall make available evidence that it satisfied the obligations of the documented specification using the specified criteria. Such evidence could include but is not limited to electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2 Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its dated, current, in force documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R1, Measure M1 as well as any documents in force since the last compliance audit.

The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2.

Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R3 and Measurement M3.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|----|---------------------|-----|---|---|---|---|
| | | | Lower | Moderate | High | Severe |
| R1 | Operations Planning | Low | The Reliability Coordinator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include any of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Reliability Coordinator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|---|---------------------|-----|---|--|---|--|
| | | | Lower | Moderate | High | Severe |
| | | | | | | monitoring, and Real-time Assessments. |
| <p>For the Requirement R2 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R2 | Operations Planning | Low | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, and Real-time monitoring, and Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to four or more entities, or more than 15% of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--|--------|--|--|--|--|
| | | | Lower | Moderate | High | Severe |
| | | | | Assessments. | monitoring, and Real-time Assessments. | Assessments. |
| R3 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow one of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow two of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow any of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|----------------|-------------------|--|---------------------------------|
| 1 | October 17, 2008 | Adopted by Board of Trustees | New |
| 1a | August 5, 2009 | Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees | Addition |
| 1a | March 17, 2011 | Order issued by FERC approving IRO-010-1a (approval effective 5/23/11) | |
| 1a | November 19, 2013 | Updated VRFs based on June 24, 2013 approval | |
| 2 | April 2014 | Revisions pursuant to Project 2014-03 | |
| 2 | November 13, 2014 | Adopted by NERC Board of Trustees | Revisions under Project 2014-03 |
| 2 | November 19, 2015 | FERC approved IRO-010-2. Docket No. RM15-16-000 | |
| 3 | February 6, 2020 | Adopted by NERC Board of Trustees | Revisions under Project 2017-07 |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT adoption, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for Applicability Changes:

Changes were made to applicability based on IRO FYRT recommendation to address the need for UVLS and UFLS information in the data specification.

The Interchange Authority was removed because activities in the Coordinate Interchange standards are performed by software systems and not a responsible entity. The software, not a functional entity, performs the task of accepting and disseminating interchange data between entities. The Balancing Authority is the responsible functional entity for these tasks.

The Planning Coordinator and Transmission Planner were removed from Draft 2 as those entities would not be involved in a data specification concept as outlined in this standard.

Rationale:

Proposed Requirement R1, Part 1.1:

Is in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Reliability Coordinator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2:

Is in response to NOPR paragraph 78 on relay data.

Proposed Requirement R3, Part 3.3:

Is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Corresponding changes have been made to proposed TOP-003-3.

Exhibit A-2

Proposed Reliability Standard IRO-010-3
Redline to Last Approved (IRO-010-2)

A. Introduction

1. **Title:** Reliability Coordinator Data Specification and Collection
2. **Number:** IRO-010-~~32~~
3. **Purpose:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
4. **Applicability**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
 - 4.3. Generator Owner.
 - 4.4. Generator Operator.
 - ~~4.5. Load Serving Entity.~~
 - ~~4.6.4.5.~~ _____ Transmission Operator.
 - ~~4.7.4.6.~~ _____ Transmission Owner.
 - ~~4.8.4.7.~~ _____ Distribution Provider.
5. **Proposed Effective Date:** See Implementation Plan.
- ~~6. Background~~

See ~~Project 2014-03 project page.~~

B. Requirements

- R1. The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*
 - 1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data, as deemed necessary by the Reliability Coordinator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.

- M1.** The Reliability Coordinator shall make available its dated, current, in force documented specification for data.
- R2.** The Reliability Coordinator shall distribute its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)
- M2.** The Reliability Coordinator shall make available evidence that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. This evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R3.** Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall satisfy the obligations of the documented specifications using: (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations*)
- 3.1** A mutually agreeable format
 - 3.2** A mutually agreeable process for resolving data conflicts
 - 3.3** A mutually agreeable security protocol
- M3.** The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Reliability Coordinator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall make available evidence that it satisfied the obligations of the documented specification using the specified criteria. Such evidence could include but is not limited to electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2 Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate

data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load Serving Entity~~, Transmission Operator, ~~Transmission Owner~~, and Distribution Provider shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its dated, current, in force documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R1, Measure M1 as well as any documents in force since the last compliance audit.

The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its data specification to entities that have data required by the Reliability Coordinator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2.

Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Interchange Authority~~, ~~Load Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R3 and Measurement M3.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|----|---------------------|-----|---|---|---|---|
| | | | Lower | Moderate | High | Severe |
| R1 | Operations Planning | Low | The Reliability Coordinator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include any of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Reliability Coordinator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|---|---------------------|-----|---|--|---|--|
| | | | Lower | Moderate | High | Severe |
| | | | | | | monitoring, and Real-time Assessments. |
| <p>For the Requirement R2 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R2 | Operations Planning | Low | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, and Real-time monitoring, and Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to four or more entities, or more than 15% of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--|--------|--|--|--|--|
| | | | Lower | Moderate | High | Severe |
| | | | | Assessments. | monitoring, and Real-time Assessments. | Assessments. |
| R3 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow one of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow two of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow any of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None

E. Interpretations

None _____

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------------|--|---------------------------------------|
| 1 | October 17, 2008 | Adopted by Board of Trustees | New |
| 1a | August 5, 2009 | Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees | Addition |
| 1a | March 17, 2011 | Order issued by FERC approving IRO-010-1a (approval effective 5/23/11) | |
| 1a | November 19, 2013 | Updated VRFs based on June 24, 2013 approval | |
| 2 | April 2014 | Revisions pursuant to Project 2014-03 | |
| 2 | November 13, 2014 | Adopted by NERC Board of Trustees | Revisions under Project 2014-03 |
| 2 | November 19, 2015 | FERC approved IRO-010-2. Docket No. RM15-16-000 | |
| <u>3</u> | <u>February 6, 2020</u> | <u>Adopted by NERC Board of Trustees</u> | <u>Revision under Project 2017-07</u> |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT adoption, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for Applicability Changes:

Changes were made to applicability based on IRO FYRT recommendation to address the need for UVLS and UFLS information in the data specification.

The Interchange Authority was removed because activities in the Coordinate Interchange standards are performed by software systems and not a responsible entity. The software, not a functional entity, performs the task of accepting and disseminating interchange data between entities. -The Balancing Authority is the responsible functional entity for these tasks.

The Planning Coordinator and Transmission Planner were removed from Draft 2 as those entities would not be involved in a data specification concept as outlined in this standard.

Rationale:

Proposed Requirement R1, Part 1.1:

Is in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Reliability Coordinator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2:

Is in response to NOPR paragraph 78 on relay data.

Proposed Requirement R3, Part 3.3:

IRO-010-3 — Reliability Coordinator Data Specification and Collection Standard IRO-010-2
— Guidelines and Technical Basis

Is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Corresponding changes have been made to proposed TOP-003-3.

Exhibit A-3

Proposed Reliability Standard MOD-031-3
Clean

A. Introduction

1. **Title:** Demand and Energy Data
2. **Number:** MOD-031-3
3. **Purpose:** To provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Balancing Authority
 - 4.1.4 Resource Planner
 - 4.1.5 Distribution Provider
5. **Effective Date:** See Implementation Plan.

B. Requirements and Measures

- R1. Each Planning Coordinator or Balancing Authority that identifies a need for the collection of Total Internal Demand, Net Energy for Load, and Demand Side Management data shall develop and issue a data request to the applicable entities in its area. The data request shall include: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
 - 1.1. A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data (“Applicable Entities”).
 - 1.2. A timetable for providing the data. (A minimum of 30 calendar days must be allowed for responding to the request).
 - 1.3. A request to provide any or all of the following actual data, as necessary:
 - 1.3.1. Integrated hourly Demands in megawatts for the prior calendar year.
 - 1.3.2. Monthly and annual integrated peak hour Demands in megawatts for the prior calendar year.
 - 1.3.2.1. If the annual peak hour actual Demand varies due to weather-related conditions (e.g., temperature, humidity or wind speed), the Applicable Entity shall also provide the weather normalized annual peak hour actual Demand for the prior calendar year.

- 1.3.3.** Monthly and annual Net Energy for Load in gigawatt hours for the prior calendar year.
- 1.3.4.** Monthly and annual peak hour controllable and dispatchable Demand Side Management under the control or supervision of the System Operator in megawatts for the prior calendar year. Three values shall be reported for each hour: 1) the committed megawatts (the amount under control or supervision), 2) the dispatched megawatts (the amount, if any, activated for use by the System Operator), and 3) the realized megawatts (the amount of actual demand reduction).
- 1.4.** A request to provide any or all of the following forecast data, as necessary:
 - 1.4.1.** Monthly peak hour forecast Total Internal Demands in megawatts for the next two calendar years.
 - 1.4.2.** Monthly forecast Net Energy for Load in gigawatthours for the next two calendar years.
 - 1.4.3.** Peak hour forecast Total Internal Demands (summer and winter) in megawatts for ten calendar years into the future.
 - 1.4.4.** Annual forecast Net Energy for Load in gigawatthours for ten calendar years into the future.
 - 1.4.5.** Total and available peak hour forecast of controllable and dispatchable Demand Side Management (summer and winter), in megawatts, under the control or supervision of the System Operator for ten calendar years into the future.
- 1.5.** A request to provide any or all of the following summary explanations, as necessary,:
 - 1.5.1.** The assumptions and methods used in the development of aggregated Peak Demand and Net Energy for Load forecasts.
 - 1.5.2.** The Demand and energy effects of controllable and dispatchable Demand Side Management under the control or supervision of the System Operator.
 - 1.5.3.** How Demand Side Management is addressed in the forecasts of its Peak Demand and annual Net Energy for Load.
 - 1.5.4.** How the controllable and dispatchable Demand Side Management forecast compares to actual controllable and dispatchable Demand Side Management for the prior calendar year and, if applicable, how the assumptions and methods for future forecasts were adjusted.
 - 1.5.5.** How the peak Demand forecast compares to actual Demand for the prior calendar year with due regard to any relevant weather-related variations

(e.g., temperature, humidity, or wind speed) and, if applicable, how the assumptions and methods for future forecasts were adjusted.

- M1.** The Planning Coordinator or Balancing Authority shall have a dated data request, either in hardcopy or electronic format, in accordance with Requirement R1.
- R2.** Each Applicable Entity identified in a data request shall provide the data requested by its Planning Coordinator or Balancing Authority in accordance with the data request issued pursuant to Requirement R1. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** Each Applicable Entity shall have evidence, such as dated e-mails or dated transmittal letters that it provided the requested data in accordance with Requirement R2.
- R3.** The Planning Coordinator or the Balancing Authority shall provide the data listed under Requirement R1 Parts 1.3 through 1.5 for their area to the applicable Regional Entity within 75 calendar days of receiving a request for such data, unless otherwise agreed upon by the parties. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Planning Coordinator or Balancing Authority, shall have evidence, such as dated e-mails or dated transmittal letters that it provided the data requested by the applicable Regional Entity in accordance with Requirement R3.
- R4.** Any Applicable Entity shall, in response to a written request for the data included in parts 1.3-1.5 of Requirement R1 from a Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner with a demonstrated need for such data in order to conduct reliability assessments of the Bulk Electric System, provide or otherwise make available that data to the requesting entity. This requirement does not modify an entity's obligation pursuant to Requirement R2 to respond to data requests issued by its Planning Coordinator or Balancing Authority pursuant to Requirement R1. Unless otherwise agreed upon, the Applicable Entity: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- shall not be required to alter the format in which it maintains or uses the data;
 - shall provide the requested data within 45 calendar days of the written request, subject to part 4.1 of this requirement; unless providing the requested data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements
- 4.1.** If the Applicable Entity does not provide data requested because (1) the requesting entity did not demonstrate a reliability need for the data; or (2) providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements, the Applicable Entity shall, within 30 calendar days of the written request, provide a written response to the requesting entity specifying the data that is not being provided and on what basis.

- M4.** Each Applicable Entity identified in Requirement R4 shall have evidence such as dated e-mails or dated transmittal letters that it provided the data requested or provided a written response specifying the data that is not being provided and the basis for not providing the data in accordance with Requirement R4.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R4, and Measures M1 through M4, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | N/A | N/A | N/A | The Planning Coordinator or Balancing Authority developed and issued a data request but failed to include either the entity(s) necessary to provide the data or the timetable for providing the data. |
| R2 | Long-term Planning | Medium | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide all of the data requested in Requirement R1 part 1.5.1 through part 1.5.5</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.4.1 through part 1.4.5</p> |

| | | | | | | |
|----|--------------------|--------|--|--|---|---|
| | | | <p>did so after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 15 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>OR The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide the data requested in the timetable provided pursuant to Requirement R1 prior to 16 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> |
| R3 | Long-term Planning | Medium | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 75 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 80 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 85 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, failed to make available the data requested prior to 91 days</p> |

| | | | | | | |
|----|--------------------|--------|---|---|---|---|
| | | | from the date of request but prior to 81 days from the date of the request. | from the date of request but prior to 86 days from the date of the request. | from the date of request but prior to 91 days from the date of the request. | or more from the date of the request. |
| R4 | Long-term Planning | Medium | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 45 days from the date of request but prior to 51 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 30 days of the written request but prior to 36 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 50 days from the date of request but prior to 56 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 35 days of the written request but prior to 41 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 55 days from the date of request but prior to 61 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 40 days of the written request but prior to 46 days of the written request.</p> | <p>The Applicable Entity failed to provide or otherwise make available the data to the requesting entity within 60 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested failed to provide a written response specifying the data that is not being provided and on what basis within 45 days of the written request.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|---|---------------------------------|
| 1 | May 6, 2014 | Adopted by the NERC Board of Trustees | |
| 1 | February 19, 2015 | FERC order approving MOD-031-1 | |
| 2 | November 5, 2015 | Adopted by the NERC Board of Trustees | |
| 2 | February 18, 2016 | FERC order approving MOD-031-2. Docket No. RD16-1-000 | |
| 3 | February 6, 2020 | Adopted by the NERC Board of Trustees | Revisions under Project 2017-07 |

Guidelines and Technical Basis

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

Rationale for R1: To ensure that when Planning Coordinators (PCs) or Balancing Authorities (BAs) request data (R1), they identify the entities that must provide the data (Applicable Entity in part 1.1), the data to be provided (parts 1.3 – 1.5) and the due dates (part 1.2) for the requested data.

For Requirement R1 part 1.3.2.1, if the Demand does not vary due to weather-related conditions (e.g., temperature, humidity or wind speed), or the weather assumed in the forecast was the same as the actual weather, the weather normalized actual Demand will be the same as the actual demand reported for Requirement R1 part 1.3.2. Otherwise the annual peak hour weather normalized actual Demand will be different from the actual demand reported for Requirement R1 part 1.3.2.

Balancing Authorities are included here to reflect a practice in the WECC Region where BAs are the entity that perform this requirement in lieu of the PC.

Rationale for R2:

This requirement will ensure that entities identified in Requirement R1, as responsible for providing data, provide the data in accordance with the details described in the data request developed in accordance with Requirement R1. In no event shall the Applicable Entity be required to provide data under this requirement that is outside the scope of parts 1.3 - 1.5 of Requirement R1.

Rationale for R3:

This requirement will ensure that the Planning Coordinator or when applicable, the Balancing Authority, provides the data requested by the Regional Entity.

Rationale for R4:

This requirement will ensure that the Applicable Entity will make the data requested by the Planning Coordinator or Balancing Authority in Requirement R1 available to other applicable entities (Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner) unless providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements. The sharing of documentation of the supporting methods and assumptions used to develop forecasts as well as information-sharing activities will improve the efficiency of planning practices and support the identification of needed system reinforcements.

The obligation to share data under Requirement R4 does not supersede or otherwise modify any of the Applicable Entity's existing confidentiality obligations. For instance, if an entity is prohibited from providing any of the requested data pursuant to confidentiality provisions of an Open Access Transmission Tariff or a contractual arrangement, Requirement R4 does not require the Applicable Entity to provide the data to a requesting entity. Rather, under Part 4.1, the Applicable Entity must simply provide written notification to the requesting entity that it will not be providing the data and the basis for not providing the data. If the Applicable Entity is subject to confidentiality obligations that allow the Applicable Entity to share the data only if certain conditions are met, the Applicable Entity shall ensure that those conditions are met within the 45-day time period provided in Requirement R4, communicate with the requesting entity regarding an extension of the 45-day time period so as to meet all those conditions, or provide justification under Part 4.1 as to why those conditions cannot be met under the circumstances.

Exhibit A-3

Proposed Reliability Standard MOD-031-3
Redline to Last Approved (MOD-031-2)

A. Introduction

1. **Title:** Demand and Energy Data
2. **Number:** MOD-031-~~2~~3
3. **Purpose:** To provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.
4. **Applicability:**

4.1. Functional Entities:

~~4.1.1 Planning Authority and Planning Coordinator (hereafter collectively referred to as the “Planning Coordinator”)~~

~~4.1.24.1.1 This proposed standard combines “Planning Authority” with “Planning Coordinator” in the list of applicable functional entities. The NERC Functional Model lists “Planning Coordinator” while the registration criteria list “Planning Authority,” and they are not yet synchronized. Until that occurs, the proposed standard applies to both “Planning Authority” and “Planning Coordinator.”~~

~~4.1.34.1.2~~ Transmission Planner

~~4.1.44.1.3~~ Balancing Authority

~~4.1.54.1.4~~ Resource Planner

~~4.1.6 Load-Serving Entity~~

~~4.1.74.1.5~~ Distribution Provider

5. **Effective Date:** See ~~the MOD-031-2~~ Implementation Plan.

~~6. Background:~~

~~To ensure that various forms of historical and forecast Demand and energy data and information is available to the parties that perform reliability studies and assessments, authority is needed to collect the applicable data.~~

~~The collection of Demand, Net Energy for Load and Demand Side Management data requires coordination and collaboration between Planning Authorities (Planning Coordinators), Transmission and Resource Planners, Load-Serving Entities and Distribution Providers. Ensuring that planners and operators have access to complete and accurate load forecasts — as well as the supporting methods and assumptions used to develop these forecasts — enhances the reliability of the Bulk Electric System. Consistent documenting and information sharing activities will also improve efficient planning practices and support the identification of needed system reinforcements. Furthermore, collection of actual Demand and Demand Side Management performance during the prior year will allow for comparison to prior forecasts and further contribute to enhanced accuracy of load forecasting practices.~~

~~Data provided under this standard is generally considered confidential by Planning Coordinators and Balancing Authorities receiving the data. Furthermore, data reported to a Regional Entity is subject to the confidentiality provisions in Section 1500 of the North American Electric Reliability Corporation Rules of Procedure and is typically aggregated with data of other functional entities in a non-attributable manner. While this standard allows for the sharing of data necessary to perform certain reliability studies and assessments, any data received under this standard for which an applicable entity has made a claim of confidentiality should be maintained as confidential by the receiving entity.~~

B. Requirements and Measures

- R1.** Each Planning Coordinator or Balancing Authority that identifies a need for the collection of Total Internal Demand, Net Energy for Load, and Demand Side Management data shall develop and issue a data request to the applicable entities in its area. The data request shall include: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** A list of Transmission Planners, Balancing Authorities, ~~Load Serving Entities~~, and Distribution Providers that are required to provide the data (“Applicable Entities”).
 - 1.2.** A timetable for providing the data. (A minimum of 30 calendar days must be allowed for responding to the request).
 - 1.3.** A request to provide any or all of the following actual data, as necessary:
 - 1.3.1.** Integrated hourly Demands in megawatts for the prior calendar year.
 - 1.3.2.** Monthly and annual integrated peak hour Demands in megawatts for the prior calendar year.
 - 1.3.2.1.** If the annual peak hour actual Demand varies due to weather-related conditions (e.g., temperature, humidity or wind speed), the Applicable Entity shall also provide the weather normalized annual peak hour actual Demand for the prior calendar year.
 - 1.3.3.** Monthly and annual Net Energy for Load in gigawatthours for the prior calendar year.
 - 1.3.4.** Monthly and annual peak hour controllable and dispatchable Demand Side Management under the control or supervision of the System Operator in megawatts for the prior calendar year. Three values shall be reported for each hour: 1) the committed megawatts (the amount under control or supervision), 2) the dispatched megawatts (the amount, if any, activated for use by the System Operator), and 3) the realized megawatts (the amount of actual demand reduction).

- 1.4. A request to provide any or all of the following forecast data, as necessary:
 - 1.4.1. Monthly peak hour forecast Total Internal Demands in megawatts for the next two calendar years.
 - 1.4.2. Monthly forecast Net Energy for Load in gigawatthours for the next two calendar years.
 - 1.4.3. Peak hour forecast Total Internal Demands (summer and winter) in megawatts for ten calendar years into the future.
 - 1.4.4. Annual forecast Net Energy for Load in gigawatthours for ten calendar years into the future.
 - 1.4.5. Total and available peak hour forecast of controllable and dispatchable Demand Side Management (summer and winter), in megawatts, under the control or supervision of the System Operator for ten calendar years into the future.
- 1.5. A request to provide any or all of the following summary explanations, as necessary:
 - 1.5.1. The assumptions and methods used in the development of aggregated Peak Demand and Net Energy for Load forecasts.
 - 1.5.2. The Demand and energy effects of controllable and dispatchable Demand Side Management under the control or supervision of the System Operator.
 - 1.5.3. How Demand Side Management is addressed in the forecasts of its Peak Demand and annual Net Energy for Load.
 - 1.5.4. How the controllable and dispatchable Demand Side Management forecast compares to actual controllable and dispatchable Demand Side Management for the prior calendar year and, if applicable, how the assumptions and methods for future forecasts were adjusted.
 - 1.5.5. How the peak Demand forecast compares to actual Demand for the prior calendar year with due regard to any relevant weather-related variations (e.g., temperature, humidity, or wind speed) and, if applicable, how the assumptions and methods for future forecasts were adjusted.
- M1. The Planning Coordinator or Balancing Authority shall have a dated data request, either in hardcopy or electronic format, in accordance with Requirement R1.
- R2. Each Applicable Entity identified in a data request shall provide the data requested by its Planning Coordinator or Balancing Authority in accordance with the data request issued pursuant to Requirement R1. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2. Each Applicable Entity shall have evidence, such as dated e-mails or dated transmittal letters that it provided the requested data in accordance with Requirement R2.

- R3.** The Planning Coordinator or the Balancing Authority shall provide the data listed under Requirement R1 Parts 1.3 through 1.5 for their area to the applicable Regional Entity within 75 calendar days of receiving a request for such data, unless otherwise agreed upon by the parties. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Planning Coordinator or Balancing Authority, shall have evidence, such as dated e-mails or dated transmittal letters that it provided the data requested by the applicable Regional Entity in accordance with Requirement R3.
- R4.** Any Applicable Entity shall, in response to a written request for the data included in parts 1.3-1.5 of Requirement R1 from a Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner with a demonstrated need for such data in order to conduct reliability assessments of the Bulk Electric System, provide or otherwise make available that data to the requesting entity. This requirement does not modify an entity's obligation pursuant to Requirement R2 to respond to data requests issued by its Planning Coordinator or Balancing Authority pursuant to Requirement R1. Unless otherwise agreed upon, the Applicable Entity: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- shall not be required to alter the format in which it maintains or uses the data;
 - shall provide the requested data within 45 calendar days of the written request, subject to part 4.1 of this requirement; unless providing the requested data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements
- 4.1.** If the Applicable Entity does not provide data requested because (1) the requesting entity did not demonstrate a reliability need for the data; or (2) providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements, the Applicable Entity shall, within 30 calendar days of the written request, provide a written response to the requesting entity specifying the data that is not being provided and on what basis.
- M4.** Each Applicable Entity identified in Requirement R4 shall have evidence such as dated e-mails or dated transmittal letters that it provided the data requested or provided a written response specifying the data that is not being provided and the basis for not providing the data in accordance with Requirement R4.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R4, and Measures M1 through M4, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | N/A | N/A | N/A | The Planning Coordinator or Balancing Authority developed and issued a data request but failed to include either the entity(s) necessary to provide the data or the timetable for providing the data. |
| R2 | Long-term Planning | Medium | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide all of the data requested in Requirement R1 part 1.5.1 through part 1.5.5</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.4.1 through part 1.4.5</p> |

| | | | | | | |
|----|--------------------|--------|--|--|---|---|
| | | | <p>did so after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 15 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>OR The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide the data requested in the timetable provided pursuant to Requirement R1 prior to 16 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> |
| R3 | Long-term Planning | Medium | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 75 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 80 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 85 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, failed to make available the data requested prior to 91 days</p> |

| | | | | | | |
|----|--------------------|--------|---|---|---|---|
| | | | from the date of request but prior to 81 days from the date of the request. | from the date of request but prior to 86 days from the date of the request. | from the date of request but prior to 91 days from the date of the request. | or more from the date of the request. |
| R4 | Long-term Planning | Medium | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 45 days from the date of request but prior to 51 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 30 days of the written request but prior to 36 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 50 days from the date of request but prior to 56 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 35 days of the written request but prior to 41 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 55 days from the date of request but prior to 61 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 40 days of the written request but prior to 46 days of the written request.</p> | <p>The Applicable Entity failed to provide or otherwise make available the data to the requesting entity within 60 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested failed to provide a written response specifying the data that is not being provided and on what basis within 45 days of the written request.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------------|---|--|
| 1 | May 6, 2014 | Adopted by the NERC Board of Trustees | |
| 1 | February 19, 2015 | FERC order approving MOD-031-1 | |
| 2 | November 5, 2015 | Adopted by the NERC Board of Trustees | |
| 2 | February 18, 2016 | FERC order approving MOD-031-2. Docket No. RD16-1-000 | |
| <u>3</u> | <u>February 6, 2020</u> | <u>Adopted by the NERC Board of Trustees</u> | <u>Revisions under Project 2017-07</u> |

Guidelines and Technical Basis

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

Rationale for R1: To ensure that when Planning Coordinators (PCs) or Balancing Authorities (BAs) request data (R1), they identify the entities that must provide the data (Applicable Entity in part 1.1), the data to be provided (parts 1.3 – 1.5) and the due dates (part 1.2) for the requested data.

For Requirement R1 part 1.3.2.1, if the Demand does not vary due to weather-related conditions (e.g., temperature, humidity or wind speed), or the weather assumed in the forecast was the same as the actual weather, the weather normalized actual Demand will be the same as the actual demand reported for Requirement R1 part 1.3.2. Otherwise the annual peak hour weather normalized actual Demand will be different from the actual demand reported for Requirement R1 part 1.3.2.

Balancing Authorities are included here to reflect a practice in the WECC Region where BAs are the entity that perform this requirement in lieu of the PC.

Rationale for R2:

This requirement will ensure that entities identified in Requirement R1, as responsible for providing data, provide the data in accordance with the details described in the data request developed in accordance with Requirement R1. In no event shall the Applicable Entity be required to provide data under this requirement that is outside the scope of parts 1.3 - 1.5 of Requirement R1.

Rationale for R3:

This requirement will ensure that the Planning Coordinator or when applicable, the Balancing Authority, provides the data requested by the Regional Entity.

Rationale for R4:

This requirement will ensure that the Applicable Entity will make the data requested by the Planning Coordinator or Balancing Authority in Requirement R1 available to other applicable entities (Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner) unless providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements. The sharing of documentation of the supporting methods and assumptions used to develop forecasts as well as information-sharing activities will improve the efficiency of planning practices and support the identification of needed system reinforcements.

The obligation to share data under Requirement R4 does not supersede or otherwise modify any of the Applicable Entity's existing confidentiality obligations. For instance, if an entity is prohibited from providing any of the requested data pursuant to confidentiality provisions of an Open Access Transmission Tariff or a contractual arrangement, Requirement R4 does not require the Applicable Entity to provide the data to a requesting entity. Rather, under Part 4.1, the Applicable Entity must simply provide written notification to the requesting entity that it will not be providing the data and the basis for not providing the data. If the Applicable Entity is subject to confidentiality obligations that allow the Applicable Entity to share the data only if certain conditions are met, the Applicable Entity shall ensure that those conditions are met within the 45-day time period provided in Requirement R4, communicate with the requesting entity regarding an extension of the 45-day time period so as to meet all those conditions, or provide justification under Part 4.1 as to why those conditions cannot be met under the circumstances.

Exhibit A-4

Proposed Reliability Standard MOD-033-2
Clean

A. Introduction

1. **Title:** Steady-State and Dynamic System Model Validation
2. **Number:** MOD-033-2
3. **Purpose:** To establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Reliability Coordinator
 - 4.1.3 Transmission Operator
5. **Effective Date:** See Implementation Plan.

B. Requirements and Measures

- R1.** Each Planning Coordinator shall implement a documented data validation process that includes the following attributes: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
 - 1.2.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
 - 1.3.** Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and
 - 1.4.** Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.
- M1.** Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.
- R2.** Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation. *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*
- M2.** Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

“Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The applicable entity shall keep data or evidence to show compliance with Requirements R1 through R2, and Measures M1 through M2, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an applicable entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Refer to Section 3.0 of Appendix 4C of the NERC Rules of Procedure for a list of compliance monitoring and assessment processes.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | <p>The Planning Coordinator documented and implemented a process to validate data but did not address one of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation within 28 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address two of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address three of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator did not have a validation process at all or did not document or implement any of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not validate its portion of the system in the power flow model as required by part 1.1 within 36 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.2 within 36 calendar</p> |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|---------------------------|--------------|---|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation within 28 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months. | months (or the next dynamic local event in cases where there is more than 24 months between events). |
| R2 | Long-term Planning | Lower | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in less than or equal to 45 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 45 calendar days but less than or equal to 60 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 60 calendar days but less than or equal to 75 calendar days. | Coordinator within 75 calendar days; OR The Reliability Coordinator or Transmission Operator provided a written response that it does not have the requested data, but actually had the data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Guidelines and Technical Basis

Requirement R1:

The requirement focuses on the results-based outcome of developing a process for and performing a validation, but does not prescribe a specific method or procedure for the validation outside of the attributes specified in the requirement. For further information on suggested validation procedures, see “Procedures for Validation of Powerflow and Dynamics Cases” produced by the NERC Model Working Group.

The specific process is left to the judgment of the Planning Coordinator, but the Planning Coordinator is required to develop and include in its process guidelines for evaluating discrepancies between actual system behavior or response and expected system performance for determining whether the discrepancies are unacceptable.

For the validation in part 1.1, the state estimator case or other Real-time data should be taken as close to system peak as possible. However, other snapshots of the system could be used if deemed to be more appropriate by the Planning Coordinator. While the requirement specifies “once every 24 calendar months,” entities are encouraged to perform the comparison on a more frequent basis.

In performing the comparison required in part 1.1, the Planning Coordinator may consider, among other criteria:

1. System load;
2. Transmission topology and parameters;
3. Voltage at major buses; and
4. Flows on major transmission elements.

The validation in part 1.1 would include consideration of the load distribution and load power factors (as applicable) used in the power flow models. The validation may be made using metered load data if state estimator cases are not available. The comparison of system load distribution and load power factors shall be made on an aggregate company or power flow zone level at a minimum but may also be made on a bus by bus, load pocket (e.g., within a Balancing Authority), or smaller area basis as deemed appropriate by the Planning Coordinator.

The scope of dynamics model validation is intended to be limited, for purposes of part 1.2, to the Planning Coordinator’s planning area, and the intended emphasis under the requirement is on local events or local phenomena, not the whole Interconnection.

The validation required in part 1.2 may include simulations that are to be compared with actual system data and may include comparisons of:

- Voltage oscillations at major buses
- System frequency (for events with frequency excursions)
- Real and reactive power oscillations on generating units and major inter-area ties

Determining when a dynamic local event might occur may be unpredictable, and because of the analytic complexities involved in simulation, the time parameters in part 1.2 specify that the comparison period of “at least once every 24 calendar months” is intended to both provide for at least 24 months between dynamic local events used in the comparisons and that comparisons must be completed within 24 months of the date of the dynamic local event used. This clarification ensures that PCs will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison. With the 30 day timeframe in Requirement R2 for TOPs or RCs to provide actual system behavior data (if necessary in the comparison), it would potentially be impossible to complete the comparison within the 24 month timeframe.

In contrast, the requirement language clarifies that the time frame between dynamic local events used in the comparisons should be within 24 months of each other (or, as specified at the end of part 1.2, in the event more than 24 months passes before the next dynamic local event, the comparison should use the next dynamic local event that occurs). Each comparison must be completed within 24 months of the dynamic local event used. In this manner, the potential problem with a “month 23” dynamic local event described above is resolved. For example, if a PC uses for comparison a dynamic local event occurring on day 1 of month 1, the PC has 24 calendar months from that dynamic local event’s occurrence to complete the comparison. If the next dynamic event the PC chooses for comparison occurs in month 23, the PC has 24 months from that dynamic local event’s occurrence to complete the comparison.

Part 1.3 requires the PC to include guidelines in its documented validation process for determining when discrepancies in the comparison of simulation results with actual system results are unacceptable. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both. For the power flow comparison, as an example, this could include a guideline the Planning Coordinator will use that flows on 500 kV lines should be within 10% or 100 MW, whichever is larger. It could be different percentages or MW amounts for different voltage levels. Or, as another example, the guideline for voltage comparisons could be that it must be within 1%. But the guidelines the PC includes within its documented validation process should be meaningful for the Planning Coordinator’s system. Guidelines for the dynamic event comparison may be less precise. Regardless, the comparison should indicate that the conclusions drawn from the two results should be consistent. For example, the guideline could state that the simulation result will be plotted on the same graph as the actual system response. Then the two plots could be given a visual inspection to see if they look similar or not. Or a guideline could be defined such that the rise time of the transient response in the simulation should be within 20% of the rise time of the actual system response. As for the power flow guidelines, the dynamic comparison criteria should be meaningful for the Planning Coordinator’s system.

The guidelines the PC includes in its documented validation process to resolve differences in Part 1.4 could include direct coordination with the data owner, and, if necessary, through the provisions of MOD-032-1, Requirement R3 (i.e., the validation performed under this requirement could identify technical concerns with the data). In other words, while this standard is focused on validation, results of the validation may identify data provided under the

modeling data standard that needs to be corrected. If a model with estimated data or a generic model is used for a generator, and the model response does not match the actual response, then the estimated data should be corrected or a more detailed model should be requested from the data provider.

While the validation is focused on the Planning Coordinator's planning area, the model for the validation should be one that contains a wider area of the Interconnection than the Planning Coordinator's area. If the simulations can be made to match the actual system responses by reasonable changes to the data in the Planning Coordinator's area, then the Planning Coordinator should make those changes in coordination with the data provider. However, for some disturbances, the data in the Planning Coordinator's area may not be what is causing the simulations to not match actual responses. These situations should be reported to the Electric Reliability Organization (ERO). The guidelines the Planning Coordinator includes under Part 1.4 could cover these situations.

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

In FERC Order No. 693, paragraph 1210, the Commission directed inclusion of "a requirement that the models be validated against actual system responses." Furthermore, the Commission directs in paragraph 1211, "that actual system events be simulated and if the model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy." Paragraph 1220 similarly directs validation against actual system responses relative to dynamics system models. In FERC Order 890, paragraph 290, the Commission states that "the models should be updated and benchmarked to actual events." Requirement R1 addresses these directives.

Requirement R1 requires the Planning Coordinator to implement a documented data validation process to validate data in the Planning Coordinator's portion of the existing system in the steady-state and dynamic models to compare performance against expected behavior or response, which is consistent with the Commission directives. The validation of the full Interconnection-wide cases is left up to the Electric Reliability Organization (ERO) or its designees, and is not addressed by this standard. The following items were chosen for the validation requirement:

- A. Comparison of performance of the existing system in a planning power flow model to actual system behavior; and
- B. Comparison of the performance of the existing system in a planning dynamics model to actual system response.

Implementation of these validations will result in more accurate power flow and dynamic models. This, in turn, should result in better correlation between system flows and voltages

seen in power flow studies and the actual values seen by system operators during outage conditions. Similar improvements should be expected for dynamics studies, such that the results will more closely match the actual responses of the power system to disturbances.

Validation of model data is a good utility practice, but it does not easily lend itself to Reliability Standards requirement language. Furthermore, it is challenging to determine specifications for thresholds of disturbances that should be validated and how they are determined. Therefore, this requirement focuses on the Planning Coordinator performing validation pursuant to its process, which must include the attributes listed in parts 1.1 through 1.4, without specifying the details of “how” it must validate, which is necessarily dependent upon facts and circumstances. Other validations are best left to guidance rather than standard requirements.

Rationale for R2:

The Planning Coordinator will need actual system behavior data in order to perform the validations required in R1. The Reliability Coordinator or Transmission Operator may have this data. Requirement R2 requires the Reliability Coordinator and Transmission Operator to supply actual system data, if it has the data, to any requesting Planning Coordinator for purposes of model validation under Requirement R1.

This could also include information the Reliability Coordinator or Transmission Operator has at a field site. For example, if a PMU or DFR is at a generator site and it is recording the disturbance, the Reliability Coordinator or Transmission Operator would typically have that data.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|---|
| 1 | February 6, 2014 | Adopted by the NERC Board of Trustees. | Developed as a new standard for system validation to address outstanding directives from FERC Order No. 693 and recommendations from several other sources. |
| 1 | May 1, 2014 | FERC Order issued approving MOD-033-1. | |
| 2 | February 6, 2020 | Adopted by the NERC Board of Trustees. | Revisions under Project 2017-07 |

Exhibit A-4

Proposed Reliability Standard MOD-033-2
Redline to Last Approved (MOD-033-1)

A. Introduction

1. **Title:** Steady-State and Dynamic System Model Validation
2. **Number:** MOD-033-~~2~~**1**
3. **Purpose:** To establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.

4. **Applicability:**

- 4.1. **Functional Entities:**

- ~~4.1.1 — Planning Authority and Planning Coordinator (hereafter referred to as “Planning Coordinator”)~~

- ~~4.1.24.1.1 This proposed standard combines “Planning Authority” with “Planning Coordinator” in the list of applicable functional entities. The NERC Functional Model lists “Planning Coordinator” while the registration criteria list “Planning Authority,” and they are not yet synchronized. Until that occurs, the proposed standard applies to both Planning Authority and Planning Coordinator.~~

- ~~4.1.34.1.2 Reliability Coordinator~~

- ~~4.1.44.1.3 Transmission Operator~~

5. **Effective Date:**

~~MOD-033-1 shall become effective on the first day of the first calendar quarter that is 36 months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is 36 months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction. See Implementation Plan.~~

- ~~6. **Background:**~~

~~MOD-033-1 exists in conjunction with MOD-032-1, both of which are related to system-level modeling and validation. Reliability Standard MOD-032-1 is a consolidation and replacement of existing MOD-010-0, MOD-011-0, MOD-012-0, MOD-013-1, MOD-014-0, and MOD-015-0.1, and it requires data submission by applicable data owners to their respective Transmission Planners and Planning Coordinators to support the Interconnection-wide case building process in their Interconnection. Reliability Standard MOD-033-1 is a new standard, and it requires each Planning Coordinator to implement a documented process to perform model validation within its planning area.~~

~~The transition and focus of responsibility upon the Planning Coordinator function in both standards are driven by several recommendations and FERC directives (to include several remaining directives from FERC Order No. 693), which are discussed in greater detail in the rationale sections of the standards. One of the most recent and significant set of recommendations came from the NERC Planning Committee's System Analysis and Modeling Subcommittee (SAMS). SAMS proposed several improvements to the modeling data standards, to include consolidation of the standards (that whitepaper is available from the December 2012 NERC Planning Committee's agenda package, item 3.4, beginning on page 99, here: <http://www.nerc.com/comm/PC/Agendas%20Highlights%20and%20Minutes%20DL/2012/2012-Dec-PC%20Agenda.pdf>).~~

~~The focus of validation in this standard is not Interconnection-wide phenomena, but on the Planning Coordinator's portion of the existing system. The Reliability Standard requires Planning Coordinators to implement a documented data validation process for power flow and dynamics. For the dynamics validation, the target of validation is those events that the Planning Coordinator determines are dynamic local events. A dynamic local event could include such things as closing a transmission line near a generating plant. A dynamic local event is a disturbance on the power system that produces some measurable transient response, such as oscillations. It could involve one small area of the system or a generating plant oscillating against the rest of the grid. The rest of the grid should not have a significant effect. Oscillations involving large areas of the grid are not local events. However, a dynamic local event could also be a subset of a larger disturbance involving large areas of the grid.~~

B. Requirements and Measures

- R1.** Each Planning Coordinator shall implement a documented data validation process that includes the following attributes: [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning*]
 - 1.1.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
 - 1.2.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
 - 1.3.** Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and

1.4. Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.

- M1.** Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.
- R2.** Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation. [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]
- M2.** Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

“Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The applicable entity shall keep data or evidence to show compliance with Requirements R1 through R2, and Measures M1 through M2, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an applicable entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Refer to Section 3.0 of Appendix 4C of the NERC Rules of Procedure for a list of compliance monitoring and assessment processes.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|---------------------------|---------------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | <p>The Planning Coordinator documented and implemented a process to validate data but did not address one of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation within 28 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address two of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address three of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator did not have a validation process at all or did not document or implement any of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not validate its portion of the system in the power flow model as required by part 1.1 within 36 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.2 within 36 calendar</p> |

| | | | | | | |
|-----------|---------------------------|--------------|--|--|--|---|
| | | | required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation within 28 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months. | months (or the next dynamic local event in cases where there is more than 24 months between events). |
| R2 | Long-term Planning | Lower | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 75 calendar days; |

| | | | | | | |
|--|--|--|--|--|--|---|
| | | | did provide the data (or written response that it does not have the requested data) in less than or equal to 45 calendar days. | did provide the data (or written response that it does not have the requested data) in greater than 45 calendar days but less than or equal to 60 calendar days. | did provide the data (or written response that it does not have the requested data) in greater than 60 calendar days but less than or equal to 75 calendar days. | OR The Reliability Coordinator or Transmission Operator provided a written response that it does not have the requested data, but actually had the data. |
|--|--|--|--|--|--|---|

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Guidelines and Technical Basis

Requirement R1:

The requirement focuses on the results-based outcome of developing a process for and performing a validation, but does not prescribe a specific method or procedure for the validation outside of the attributes specified in the requirement. For further information on suggested validation procedures, see “Procedures for Validation of Powerflow and Dynamics Cases” produced by the NERC Model Working Group.

The specific process is left to the judgment of the Planning Coordinator, but the Planning Coordinator is required to develop and include in its process guidelines for evaluating discrepancies between actual system behavior or response and expected system performance for determining whether the discrepancies are unacceptable.

For the validation in part 1.1, the state estimator case or other Real-time data should be taken as close to system peak as possible. However, other snapshots of the system could be used if deemed to be more appropriate by the Planning Coordinator. While the requirement specifies “once every 24 calendar months,” entities are encouraged to perform the comparison on a more frequent basis.

In performing the comparison required in part 1.1, the Planning Coordinator may consider, among other criteria:

1. System load;
2. Transmission topology and parameters;
3. Voltage at major buses; and
4. Flows on major transmission elements.

The validation in part 1.1 would include consideration of the load distribution and load power factors (as applicable) used in the power flow models. The validation may be made using metered load data if state estimator cases are not available. The comparison of system load distribution and load power factors shall be made on an aggregate company or power flow zone level at a minimum but may also be made on a bus by bus, load pocket (e.g., within a Balancing Authority), or smaller area basis as deemed appropriate by the Planning Coordinator.

The scope of dynamics model validation is intended to be limited, for purposes of part 1.2, to the Planning Coordinator’s planning area, and the intended emphasis under the requirement is on local events or local phenomena, not the whole Interconnection.

The validation required in part 1.2 may include simulations that are to be compared with actual system data and may include comparisons of:

- Voltage oscillations at major buses
- System frequency (for events with frequency excursions)
- Real and reactive power oscillations on generating units and major inter-area ties

Determining when a dynamic local event might occur may be unpredictable, and because of the analytic complexities involved in simulation, the time parameters in part 1.2 specify that the comparison period of “at least once every 24 calendar months” is intended to both provide for at least 24 months between dynamic local events used in the comparisons and that comparisons must be completed within 24 months of the date of the dynamic local event used. This clarification ensures that PCs will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison. With the 30 day timeframe in Requirement R2 for TOPs or RCs to provide actual system behavior data (if necessary in the comparison), it would potentially be impossible to complete the comparison within the 24 month timeframe.

In contrast, the requirement language clarifies that the time frame between dynamic local events used in the comparisons should be within 24 months of each other (or, as specified at the end of part 1.2, in the event more than 24 months passes before the next dynamic local event, the comparison should use the next dynamic local event that occurs). Each comparison must be completed within 24 months of the dynamic local event used. In this manner, the potential problem with a “month 23” dynamic local event described above is resolved. For example, if a PC uses for comparison a dynamic local event occurring on day 1 of month 1, the PC has 24 calendar months from that dynamic local event’s occurrence to complete the comparison. If the next dynamic event the PC chooses for comparison occurs in month 23, the PC has 24 months from that dynamic local event’s occurrence to complete the comparison.

Part 1.3 requires the PC to include guidelines in its documented validation process for determining when discrepancies in the comparison of simulation results with actual system results are unacceptable. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both. For the power flow comparison, as an example, this could include a guideline the Planning Coordinator will use that flows on 500 kV lines should be within 10% or 100 MW, whichever is larger. It could be different percentages or MW amounts for different voltage levels. Or, as another example, the guideline for voltage comparisons could be that it must be within 1%. But the guidelines the PC includes within its documented validation process should be meaningful for the Planning Coordinator’s system. Guidelines for the dynamic event comparison may be less precise. Regardless, the comparison should indicate that the conclusions drawn from the two results should be consistent. For example, the guideline could state that the simulation result will be plotted on the same graph as the actual system response. Then the two plots could be given a visual inspection to see if they look similar or not. Or a guideline could be defined such that the rise time of the transient response in the simulation should be within 20% of the rise time of the actual system response. As for the power flow guidelines, the dynamic comparison criteria should be meaningful for the Planning Coordinator’s system.

The guidelines the PC includes in its documented validation process to resolve differences in Part 1.4 could include direct coordination with the data owner, and, if necessary, through the provisions of MOD-032-1, Requirement R3 (i.e., the validation performed under this requirement could identify technical concerns with the data). In other words, while this standard is focused on validation, results of the validation may identify data provided under the

modeling data standard that needs to be corrected. If a model with estimated data or a generic model is used for a generator, and the model response does not match the actual response, then the estimated data should be corrected or a more detailed model should be requested from the data provider.

While the validation is focused on the Planning Coordinator's planning area, the model for the validation should be one that contains a wider area of the Interconnection than the Planning Coordinator's area. If the simulations can be made to match the actual system responses by reasonable changes to the data in the Planning Coordinator's area, then the Planning Coordinator should make those changes in coordination with the data provider. However, for some disturbances, the data in the Planning Coordinator's area may not be what is causing the simulations to not match actual responses. These situations should be reported to the Electric Reliability Organization (ERO). The guidelines the Planning Coordinator includes under Part 1.4 could cover these situations.

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

In FERC Order No. 693, paragraph 1210, the Commission directed inclusion of "a requirement that the models be validated against actual system responses." Furthermore, the Commission directs in paragraph 1211, "that actual system events be simulated and if the model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy." Paragraph 1220 similarly directs validation against actual system responses relative to dynamics system models. In FERC Order 890, paragraph 290, the Commission states that "the models should be updated and benchmarked to actual events." Requirement R1 addresses these directives.

Requirement R1 requires the Planning Coordinator to implement a documented data validation process to validate data in the Planning Coordinator's portion of the existing system in the steady-state and dynamic models to compare performance against expected behavior or response, which is consistent with the Commission directives. The validation of the full Interconnection-wide cases is left up to the Electric Reliability Organization (ERO) or its designees, and is not addressed by this standard. The following items were chosen for the validation requirement:

- A. Comparison of performance of the existing system in a planning power flow model to actual system behavior; and
- B. Comparison of the performance of the existing system in a planning dynamics model to actual system response.

Implementation of these validations will result in more accurate power flow and dynamic models. This, in turn, should result in better correlation between system flows and voltages seen in power flow studies and the actual values seen by system operators during outage conditions. Similar improvements should be expected for dynamics studies, such that the results will more closely match the actual responses of the power system to disturbances.

Validation of model data is a good utility practice, but it does not easily lend itself to Reliability Standards requirement language. Furthermore, it is challenging to determine specifications for thresholds of disturbances that should be validated and how they are determined. Therefore, this requirement focuses on the Planning Coordinator performing validation pursuant to its process, which must include the attributes listed in parts 1.1 through 1.4, without specifying the details of “how” it must validate, which is necessarily dependent upon facts and circumstances. Other validations are best left to guidance rather than standard requirements.

Rationale for R2:

The Planning Coordinator will need actual system behavior data in order to perform the validations required in R1. The Reliability Coordinator or Transmission Operator may have this data. Requirement R2 requires the Reliability Coordinator and Transmission Operator to supply actual system data, if it has the data, to any requesting Planning Coordinator for purposes of model validation under Requirement R1.

This could also include information the Reliability Coordinator or Transmission Operator has at a field site. For example, if a PMU or DFR is at a generator site and it is recording the disturbance, the Reliability Coordinator or Transmission Operator would typically have that data.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|---|
| 1 | February 6, 2014 | Adopted by the NERC Board of Trustees. | Developed as a new standard for system validation to address outstanding directives from FERC Order No. 693 and recommendations from several other sources. |
| 1 | May 1, 2014 | FERC Order issued approving MOD-033-1. | |

MOD-033-2 — Steady-State and Dynamic System Model Validation ~~Application Guidelines~~

| | | | |
|----------|-------------------------|---|--|
| <u>2</u> | <u>February 6, 2020</u> | <u>Adopted by NERC Board of Trustees.</u> | <u>Revisions under Project 2017-07</u> |
|----------|-------------------------|---|--|

Exhibit A-5

Proposed Reliability Standard NUC-001-4
Clean

A. Introduction

1. **Title:** Nuclear Plant Interface Coordination
2. **Number:** NUC-001-4
3. **Purpose:** This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Nuclear Plant Generator Operators.
 - 4.2. Transmission Entities shall mean all entities that are responsible for providing services related to Nuclear Plant Interface Requirements (NPIRs). Such entities may include one or more of the following:
 - 4.2.1 Transmission Operators.
 - 4.2.2 Transmission Owners.
 - 4.2.3 Transmission Planners.
 - 4.2.4 Transmission Service Providers.
 - 4.2.5 Balancing Authorities.
 - 4.2.6 Reliability Coordinators.
 - 4.2.7 Planning Coordinators.
 - 4.2.8 Distribution Providers.
 - 4.2.9 Generator Owners.
 - 4.2.10 Generator Operators.
5. **Effective Date:** See Implementation Plan.

B. Requirements and Measures

- R1.** The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M1.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide a copy of the transmittal and receipt of transmittal of the proposed NPIRs to the responsible Transmission Entities.
- R2.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements¹ that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** The Nuclear Plant Generator Operator and each Transmission Entity shall each have a copy of the currently effective Agreement(s) which document how the Nuclear Plant Generator Operator and the applicable Transmission Entities address and implement the NPIRs available for inspection upon request of the Compliance Enforcement Authority.
- R3.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Entity responsible for planning analyses in accordance with the Agreement shall, upon request of the Compliance Enforcement Authority, provide a copy of the planning analyses results transmitted to the Nuclear Plant Generator Operator, showing incorporation of the NPIRs. The Compliance Enforcement Authority shall refer to the Agreements developed in accordance with this standard for specific requirements.
- R4.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- 4.1.** Incorporate the NPIRs into their operating analyses of the electric system.
- 4.2.** Operate the electric system to meet the NPIRs.

¹ Agreements may include mutually agreed upon procedures or protocols in effect between entities or between departments of a vertically integrated system.

- 4.3. Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.
- M4.** Each Transmission Entity responsible for operating the electric system in accordance with the Agreement shall demonstrate or provide evidence of the following, upon request of the Compliance Enforcement Authority:
- The NPIRs have been incorporated into the current operating analysis of the electric system. (Requirement 4.1)
 - The electric system was operated to meet the NPIRs. (Requirement 4.2)
 - The Transmission Entity informed the Nuclear Plant Generator Operator when it became aware it lost the capability to assess the operation of the electric system affecting the NPIRs
- R5.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall operate the nuclear plant to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- M5.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, demonstrate or provide evidence that the nuclear power plant is being operated consistent with the NPIRs.
- R6.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M6.** The Transmission Entities and Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide evidence of the coordination between the Transmission Entities and the Nuclear Plant Generator Operator regarding outages and maintenance activities which affect the NPIRs.
- R7.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M7.** The Nuclear Plant Generator Operator shall provide evidence that it informed the applicable Transmission Entities of changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Transmission Entities to meet the NPIRs.

- R8.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M8.** The Transmission Entities shall each provide evidence that the entities informed the Nuclear Plant Generator Operator of changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Nuclear Plant Generator Operator to meet the NPIRs.
- R9.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include the following elements in aggregate within the Agreement(s) identified in R2.
- Where multiple Agreements with a single Transmission Entity are put into effect, the R9 elements must be addressed in aggregate within the Agreements; however, each Agreement does not have to contain each element. The Nuclear Plant Generator Operator and the Transmission Entity are responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements.
 - Where Agreements with multiple Transmission Entities are required, the Nuclear Plant Generator Operator is responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements with the Transmission Entities. The Agreements with each Transmission Entity do not have to contain each element; however, the Agreements with the multiple Transmission Entities, in the aggregate, must address all R9 elements. For each Agreement(s), the Nuclear Plant Generator Operator and the Transmission Entity are responsible to ensure the Agreement(s) contain(s) the elements of R9 applicable to that Transmission Entity. : *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 9.1.** Retired. *[Note: Part 9.1 was retired under the Paragraph 81 project. The NUC SDT proposes to leave this Part blank to avoid renumbering Requirement parts that would impact existing agreements throughout the industry.]*
- 9.2.** Technical requirements and analysis:
- 9.2.1.** Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the Agreement.
 - 9.2.2.** Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.
 - 9.2.3.** Types of planning and operational analyses performed specifically to support the NPIRs, including the frequency of studies and types of Contingencies and scenarios required.

9.3. Operations and maintenance coordination

- 9.3.1.** Designation of ownership of electrical facilities at the interface between the electric system and the nuclear plant and responsibilities for operational control coordination and maintenance of these facilities.
- 9.3.2.** Identification of any maintenance requirements for equipment not owned or controlled by the Nuclear Plant Generator Operator that are necessary to meet the NPIRs.
- 9.3.3.** Coordination of testing, calibration and maintenance of on-site and off-site power supply systems and related components.
- 9.3.4.** Provisions to address mitigating actions needed to avoid violating NPIRs and to address periods when responsible Transmission Entity loses the ability to assess the capability of the electric system to meet the NPIRs. These provisions shall include responsibility to notify the Nuclear Plant Generator Operator within a specified time frame.
- 9.3.5.** Provision for considering, within the restoration process, the requirements and urgency of a nuclear plant that has lost all off-site and on-site AC power.
- 9.3.6.** Coordination of physical and cyber security protection at the nuclear plant interface to ensure each asset is covered under at least one entity's plan.
- 9.3.7.** Coordination of the NPIRs with transmission system Remedial Action Schemes and any programs that reduce or shed load based on underfrequency or undervoltage.

9.4. Communications and training Administrative elements:

- 9.4.1.** Provisions for communications affecting the NPIRs between the Nuclear Plant Generator Operator and Transmission Entities, including communications protocols, notification time requirements, and definitions of applicable unique terms.
- 9.4.2.** Provisions for coordination during an off-normal or emergency event affecting the NPIRs, including the need to provide timely information explaining the event, an estimate of when the system will be returned to a normal state, and the actual time the system is returned to normal.
- 9.4.3.** Provisions for coordinating investigations of causes of unplanned events affecting the NPIRs and developing solutions to minimize future risk of such events.
- 9.4.4.** Provisions for supplying information necessary to report to government agencies, as related to NPIRs.
- 9.4.5.** Provisions for personnel training, as related to NPIRs.

M9. The Nuclear Plant Generator Operator shall have a copy of the Agreement(s) addressing the elements in Requirement 9 available for inspection upon request of the Compliance Enforcement Authority. Each Transmission Entity shall have a copy of the Agreement(s) addressing the elements in Requirement 9 for which it is responsible available for inspection upon request of the Compliance Enforcement Authority.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

1.2. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.3. Data Retention

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- For Measure 1, the Nuclear Plant Generator Operator shall keep its latest transmittals and receipts.
- For Measure 2, the Nuclear Plant Generator Operator and each Transmission Entity shall have its current, in-force Agreement.
- For Measure 3, the Transmission Entity shall have the latest planning analysis results.
- For Measures 4, 6 and 8, the Transmission Entity shall keep evidence for two years plus current.
- For Measures 5, 6 and 7, the Nuclear Plant Generator Operator shall keep evidence for two years plus current.

If a Responsible Entity is found non-compliant it shall keep information related to the noncompliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|--------|--|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | | Medium | The Nuclear Plant Generator Operator provided the NPIRs to the applicable entities but did not verify receipt. | The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities unless there was only one entity. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to two of the applicable entities unless there were only two entities. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to more than two of applicable entities. OR For a particular nuclear power plant, if the number of possible applicable transmission entities is equal to the number of applicable transmission entities not provided NPIRs |
| R2 | | Medium | N/A | N/A | N/A | The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|---------------------------|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | | document the implementation of the NPIRs. |
| R3 | | Medium | N/A | The responsible entity incorporated the NPIRs into its planning analyses but did not communicate the results to the Nuclear Plant Generator Operator. | N/A | The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system. |
| R4 | | High | N/A | The responsible entity did not comply with Requirement R4, Part 4.3. | The responsible entity did not comply with Requirement R4, Part R4.1. | The responsible entity did not comply with Requirement R4, Part R4.2. |
| R5 | | High | N/A | N/A | N/A | The Nuclear Plant Generator Operator failed to operate per the NPIRs developed in accordance with this standard. |
| R6 | | Medium | N/A | The Nuclear Plant Generator Operator or Transmission Entity failed to provide | The Nuclear Plant Generator Operator or Transmission Entity failed to coordinate | N/A |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|------|---|---|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements. | one or more outages or maintenance activities in accordance the requirements of the agreements. | |
| R7 | | High | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>proposed</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | N/A | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs. |
| R8 | | High | The applicable Transmission Entities did not inform the | N/A | The applicable Transmission Entities did not inform the | The applicable Transmission Entities did not inform the |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Nuclear Plant Generator Operator of <u>proposed</u> changes to transmission system design, configuration (e.g. protective relay setpoints), operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>directly impacts</u> the ability of the electric system to meet the NPIRs. |
| R9 | | Medium | | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include up to 20% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to that entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include greater than 20%, but less than 40% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include 40% or more of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|---------------------------|--------------|---------------------------|---------------------------|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | applicable to the entity. | applicable to the entity. |

D. Regional Variances

The design basis for Canadian (CANDU) nuclear power plants (NPPs) does not result in the same licensing requirements as U.S. NPPs. Nuclear Regulatory Commission (NRC) design criteria specifies that in addition to emergency on-site electrical power, electrical power from the electric network also be provided to permit safe shutdown. There are no equivalent Canadian Regulatory requirements for electrical power from the electric network to be provided to permit safe shutdown. Therefore the definition of Nuclear Plant Licensing Requirements (NPLR) for Canadian CANDU NPPs will be as follows:

Canadian Nuclear Plant Licensing Requirements (CNPLR) are requirements included in the design basis of the nuclear plant and are statutorily mandated for the operation of the plant; when used in this standard, NPLR shall mean nuclear power plant licensing requirements for avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 1 | May 2, 2007 | Approved by Board of Trustees | New |
| 2 | August 5, 2009 | Adopted by Board of Trustees | Revised. Modifications for Order 716 to Requirement R9.3.5 and footnote 1; modifications to bring compliance elements into conformance with the latest version of the ERO Rules of Procedure. |
| 2 | January 22, 2010 | Approved by FERC on January 21, 2010. Added Effective Date | Update |
| 2 | February 7, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 2 | November 21, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2.1 | April 11, 2012 | Errata approved by the Standards Committee; (Capitalized “Protection System” in accordance with Implementation Plan for Project 2007-17 approval of revised definition of “Protection System”) | Errata associated with Project 2007-17 |
| 2.1 | September 9, 2013 | Informational filing submitted to reflect the revised | |

| | | | |
|---|------------------|---|---------------------------------|
| | | definition of Protection System in accordance with the Implementation Plan for the revised term. | |
| 3 | March 2014 | Modifications to implement the recommendations of the five-year review of NUC-001, which was accepted by the Standards Committee on October 17, 2013. | Revision |
| 3 | August 14, 2014 | Adopted by the NERC Board of Trustees | |
| 3 | November 4, 2014 | FERC letter order issued approving NUC-001-3 | |
| 4 | February 6, 2020 | Adopted by NERC Board of Trustees | Revisions under Project 2017-07 |

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R5:

The NUC FYRT recommended R5 be revised for consistency with R4 and to clarify that nuclear plants must be operated to meet the Nuclear Plant Interface Requirements.

Rationale for R7 and R8:

The NUC FYRT recommended deleting “Protection Systems” in Requirements R7 and R8 since it is a subset of the "nuclear plant design" and "electric system design" elements currently contained in R7 and R8 respectively; and adding a parenthetical clause (e.g. protective setpoints) to R7 following "nuclear plant design" and parenthetical clause (e.g. relay setpoints) to R8 following "electric system design."

Rationale for R9:

The NUC FYRT recommended that R9 be revised to clarify that all agreements do not have to discuss each of the elements in R9, but that the sum total of the agreements need to address the elements. In addition, for clarity in Part 9.4.1, the NUC FYRT recommended that "affecting the NPIRs" be inserted following "Provisions for communications" and "applicable unique" be inserted following ""definitions of."

Rationale for R9.3.7:

The term “Special Protection Systems” (SPS) was replaced with “Remedial Action Schemes” (RAS) in order to align with other current NERC standards development work in Project 2010-05.2: Special Protection Systems. Project 2010-05.2 has proposed to replace SPS with RAS throughout all of the NERC Standards in order to move to the use of a single term. RAS and SPS have the same definition in the NERC Glossary of Terms.

Exhibit A-5

Proposed Reliability Standard NUC-001-4
Redline to Last Approved (NUC-001-3)

NUC-001-~~34~~— Nuclear Plant Interface Coordination

A. Introduction

1. **Title:** Nuclear Plant Interface Coordination
2. **Number:** NUC-001-~~43~~
3. **Purpose:** This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Nuclear Plant Generator Operators.
 - 4.2. Transmission Entities shall mean all entities that are responsible for providing services related to Nuclear Plant Interface Requirements (NPIRs). Such entities may include one or more of the following:
 - 4.2.1 Transmission Operators.
 - 4.2.2 Transmission Owners.
 - 4.2.3 Transmission Planners.
 - 4.2.4 Transmission Service Providers.
 - 4.2.5 Balancing Authorities.
 - 4.2.6 Reliability Coordinators.
 - 4.2.7 Planning Coordinators.
 - ~~4.2.8~~—Distribution Providers.
 - ~~4.2.8~~
 - ~~4.2.9~~—Load Serving Entities.
 - ~~4.2.10~~4.2.9 Generator Owners.
 - ~~4.2.11~~4.2.10 Generator Operators.

5. **Effective Date:** See Implementation Plan.

~~**Background:**—Project 2012-13 Nuclear Power Interface Coordination seeks to implement the changes that were proposed by the NUC FYRT. The NUC FYRT was appointed by the Standards Committee Executive Committee on April 22, 2013. The NUC FYRT reviewed the NUC 001-2.1 standard to identify opportunities for consolidation and additional improvements. The NUC FYRT posted its recommendation to revise NUC 001-2.1 for industry comment on July 27, 2013. The NUC FYRT considered comments and submitted its final recommendation to revise NUC 001-2.1, along with a Standards Authorization Request (SAR) to the Standards Committee on October 17, 2013. The Standards Committee accepted~~

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~~the recommendation of the FYRT and appointed the team as the Standard Drafting Team (SDT) to implement the recommendation.~~

~~5. **Effective Dates:** First day of the first calendar quarter that is twelve months beyond the date that this standard is approved by applicable regulatory authorities, or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is twelve months after the date this standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

B. Requirements and Measures

- R1.** The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning-]*
- M1.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide a copy of the transmittal and receipt of transmittal of the proposed NPIRs to the responsible Transmission Entities.
- R2.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements¹ that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** The Nuclear Plant Generator Operator and each Transmission Entity shall each have a copy of the currently effective Agreement(s) which document how the Nuclear Plant Generator Operator and the applicable Transmission Entities address and implement the NPIRs available for inspection upon request of the Compliance Enforcement Authority.
- R3.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Entity responsible for planning analyses in accordance with the Agreement shall, upon request of the Compliance Enforcement Authority, provide a copy of the planning analyses results transmitted to the Nuclear Plant Generator Operator, showing incorporation of the NPIRs. The Compliance Enforcement

¹ Agreements may include mutually agreed upon procedures or protocols in effect between entities or between departments of a vertically integrated system.

NUC-001-34— Nuclear Plant Interface Coordination

Authority shall refer to the Agreements developed in accordance with this standard for specific requirements.

- R4.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- 4.1.** Incorporate the NPIRs into their operating analyses of the electric system.
 - 4.2.** Operate the electric system to meet the NPIRs.
 - 4.3.** Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.
- M4.** Each Transmission Entity responsible for operating the electric system in accordance with the Agreement shall demonstrate or provide evidence of the following, upon request of the Compliance Enforcement Authority:
- The NPIRs have been incorporated into the current operating analysis of the electric system. (Requirement 4.1)
 - The electric system was operated to meet the NPIRs. (Requirement 4.2)
 - The Transmission Entity informed the Nuclear Plant Generator Operator when it became aware it lost the capability to assess the operation of the electric system affecting the NPIRs
- R5.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall operate the nuclear plant to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- M5.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, demonstrate or provide evidence that the nuclear power plant is being operated consistent with the NPIRs.
- R6.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M6.** The Transmission Entities and Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide evidence of the coordination between the Transmission Entities and the Nuclear Plant Generator Operator regarding outages and maintenance activities which affect the NPIRs.
- R7.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design (e.g., protective relay setpoints),

NUC-001-34— Nuclear Plant Interface Coordination

configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*

- M7.** The Nuclear Plant Generator Operator shall provide evidence that it informed the applicable Transmission Entities of changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Transmission Entities to meet the NPIRs.
- R8.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M8.** The Transmission Entities shall each provide evidence that the entities informed the Nuclear Plant Generator Operator of changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Nuclear Plant Generator Operator to meet the NPIRs.
- R9.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include the following elements in aggregate within the Agreement(s) identified in R2.
- Where multiple Agreements with a single Transmission Entity are put into effect, the R9 elements must be addressed in aggregate within the Agreements; however, each Agreement does not have to contain each element. The Nuclear Plant Generator Operator and the Transmission Entity are responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements.
 - Where Agreements with multiple Transmission Entities are required, the Nuclear Plant Generator Operator is responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements with the Transmission Entities. The Agreements with each Transmission Entity do not have to contain each element; however, the Agreements with the multiple Transmission Entities, in the aggregate, must address all R9 elements. For each Agreement(s), the Nuclear Plant Generator Operator and the Transmission Entity are responsible to ensure the Agreement(s) contain(s) the elements of R9 applicable to that Transmission Entity. : *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*

9.1.—Retired. *[Note: Part 9.1 was retired under the Paragraph 81 project. The NUC SDT proposes to leave this Part blank to avoid renumbering Requirement parts that would impact existing agreements throughout the industry.]*

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9.2.9.1. Technical requirements and analysis:

9.2.1.9.1.1. Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the Agreement.

9.2.2.9.1.2. Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.

9.2.3.9.1.3. Types of planning and operational analyses performed specifically to support the NPIRs, including the frequency of studies and types of Contingencies and scenarios required.

9.3.9.2. Operations and maintenance coordination

9.3.1.9.2.1. Designation of ownership of electrical facilities at the interface between the electric system and the nuclear plant and responsibilities for operational control coordination and maintenance of these facilities.

9.3.2.9.2.2. Identification of any maintenance requirements for equipment not owned or controlled by the Nuclear Plant Generator Operator that are necessary to meet the NPIRs.

9.3.3.9.2.3. Coordination of testing, calibration and maintenance of on-site and off-site power supply systems and related components.

9.3.4.9.2.4. Provisions to address mitigating actions needed to avoid violating NPIRs and to address periods when responsible Transmission Entity loses the ability to assess the capability of the electric system to meet the NPIRs. These provisions shall include responsibility to notify the Nuclear Plant Generator Operator within a specified time frame.

9.3.5.9.2.5. Provision for considering, within the restoration process, the requirements and urgency of a nuclear plant that has lost all off-site and on-site AC power.

9.3.6.9.2.6. Coordination of physical and cyber security protection at the nuclear plant interface to ensure each asset is covered under at least one entity's plan.

9.3.7.9.2.7. Coordination of the NPIRs with transmission system Remedial Action Schemes and any programs that reduce or shed load based on underfrequency or undervoltage.

9.4.9.3. Communications and training Administrative elements:

9.4.1.9.3.1. Provisions for communications affecting the NPIRs between the Nuclear Plant Generator Operator and Transmission Entities, including communications protocols, notification time requirements, and definitions of applicable unique terms.

9.4.2.9.3.2. Provisions for coordination during an off-normal or emergency event affecting the NPIRs, including the need to provide timely information explaining the event, an estimate of when the system will be

returned to a normal state, and the actual time the system is returned to normal.

~~9.4.3~~9.3.3. Provisions for coordinating investigations of causes of unplanned events affecting the NPIRs and developing solutions to minimize future risk of such events.

~~9.4.4~~9.3.4. Provisions for supplying information necessary to report to government agencies, as related to NPIRs.

~~9.4.5~~9.3.5. Provisions for personnel training, as related to NPIRs.

M9. The Nuclear Plant Generator Operator shall have a copy of the Agreement(s) addressing the elements in Requirement 9 available for inspection upon request of the Compliance Enforcement Authority. Each Transmission Entity shall have a copy of the Agreement(s) addressing the elements in Requirement 9 for which it is responsible available for inspection upon request of the Compliance Enforcement Authority.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

1.2. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.3. Data Retention

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- For Measure 1, the Nuclear Plant Generator Operator shall keep its latest transmittals and receipts.
- For Measure 2, the Nuclear Plant Generator Operator and each Transmission Entity shall have its current, in-force Agreement.

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- For Measure 3, the Transmission Entity shall have the latest planning analysis results.
- For Measures 4, 6 and 8, the Transmission Entity shall keep evidence for two years plus current.
- For Measures 5, 6 and 7, the Nuclear Plant Generator Operator shall keep evidence for two years plus current.

If a Responsible Entity is found non-compliant it shall keep information related to the noncompliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|--------|--|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | | Medium | The Nuclear Plant Generator Operator provided the NPIRs to the applicable entities but did not verify receipt. | The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities unless there was only one entity. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to two of the applicable entities unless there were only two entities. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to more than two of applicable entities. OR For a particular nuclear power plant, if the number of possible applicable transmission entities is equal to the number of applicable transmission entities not provided NPIRs |
| R2 | | Medium | N/A | N/A | N/A | The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and document the implementation of the NPIRs. |
| R3 | | Medium | N/A | The responsible entity incorporated the NPIRs into its planning analyses but did not communicate | N/A | The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system. |

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| | | | | | | |
|-----------|--|---------------|---|---|--|---|
| | | | | the results to the Nuclear Plant Generator Operator. | | |
| R4 | | High | N/A | The responsible entity did not comply with Requirement R4, Part 4.3. | The responsible entity did not comply with Requirement R4, Part R4.1. | The responsible entity did not comply with Requirement R4, Part R4.2. |
| R5 | | High | N/A | N/A | N/A | The Nuclear Plant Generator Operator failed to operate per the NPIRs developed in accordance with this standard. |
| R6 | | Medium | N/A | The Nuclear Plant Generator Operator or Transmission Entity failed to provide outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements. | The Nuclear Plant Generator Operator or Transmission Entity failed to coordinate one or more outages or maintenance activities in accordance the requirements of the agreements. | N/A |
| R7 | | High | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>proposed</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | N/A | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs. |
| R8 | | High | The applicable Transmission Entities did not inform the Nuclear | N/A | The applicable Transmission Entities did not inform the Nuclear | The applicable Transmission Entities did not inform the Nuclear |

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| | | | | | | |
|-----------|--|---------------|---|---|--|--|
| | | | Plant Generator Operator of <u>proposed</u> changes to transmission system design, configuration (e.g. protective relay setpoints), operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | | Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>directly impacts</u> the ability of the electric system to meet the NPIRs. |
| R9 | | Medium | | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include up to 20% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to that entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include greater than 20%, but less than 40% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to the entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include 40% or more of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to the entity. |

D. Regional Variances

The design basis for Canadian (CANDU) nuclear power plants (NPPs) does not result in the same licensing requirements as U.S. NPPs. Nuclear Regulatory Commission (NRC) design criteria specifies that in addition to emergency on-site electrical power, electrical power from the electric network also be provided to permit safe shutdown. There are no equivalent Canadian Regulatory requirements for electrical power from the electric network to be provided to permit safe shutdown. Therefore the definition of Nuclear Plant Licensing Requirements (NPLR) for Canadian CANDU NPPs will be as follows:

Canadian Nuclear Plant Licensing Requirements (CNPLR) are requirements included in the design basis of the nuclear plant and are statutorily mandated for the operation of the plant; when used in this standard, NPLR shall mean nuclear power plant licensing requirements for avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.

E. Interpretations

None.

F. Associated Documents

None

Version History

NUC-001-4— Nuclear Plant Interface Coordination

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 1 | May 2, 2007 | Approved by Board of Trustees | New |
| 2 | August 5, 2009 | Adopted by Board of Trustees | Revised. Modifications for Order 716 to Requirement R9.3.5 and footnote 1; modifications to bring compliance elements into conformance with the latest version of the ERO Rules of Procedure. |
| 2 | January 22, 2010 | Approved by FERC on January 21, 2010. Added Effective Date | Update |
| 2 | February 7, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 2 | November 21, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2.1 | April 11, 2012 | Errata approved by the Standards Committee; (Capitalized "Protection System" in accordance with Implementation Plan for Project 2007-17 approval of revised definition of "Protection System") | Errata associated with Project 2007-17 |
| 2.1 | September 9, 2013 | Informational filing submitted to reflect the revised definition of Protection System in accordance with the Implementation Plan for the revised term. | |
| 3 | March 2014 | Modifications to implement the recommendations of the five-year review of NUC-001, which was accepted by the Standards Committee on October 17, 2013. | Revision |
| 3 | August 14, 2014 | Adopted by the NERC Board of Trustees | |
| 3 | November 4, 2014 | FERC letter order issued approving NUC-001-3 | |

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NUC-001-4— Nuclear Plant Interface Coordination

| | | | |
|----------|-------------------------|--|--|
| <u>4</u> | <u>February 6, 2020</u> | <u>Adopted by the NERC Board of Trustees</u> | <u>Revisions under Project 2017-07</u> |
|----------|-------------------------|--|--|

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R5:

The NUC FYRT recommended R5 be revised for consistency with R4 and to clarify that nuclear plants must be operated to meet the Nuclear Plant Interface Requirements.

Rationale for R7 and R8:

The NUC FYRT recommended deleting "Protection Systems" in Requirements R7 and R8 since it is a subset of the "nuclear plant design" and "electric system design" elements currently contained in R7 and R8 respectively; and adding a parenthetical clause (e.g. protective setpoints) to R7 following "nuclear plant design" and parenthetical clause (e.g. relay setpoints) to R8 following "electric system design."

Rationale for R9:

The NUC FYRT recommended that R9 be revised to clarify that all agreements do not have to discuss each of the elements in R9, but that the sum total of the agreements need to address the elements. In addition, for clarity in Part 9.4.1, the NUC FYRT recommended that "affecting the NPIRs" be inserted following "Provisions for communications" and "applicable unique" be inserted following ""definitions of."

Rationale for R9.3.7:

The term "Special Protection Systems" (SPS) was replaced with "Remedial Action Schemes" (RAS) in order to align with other current NERC standards development work in Project 2010-05.2: Special Protection Systems. Project 2010-05.2 has proposed to replace SPS with RAS throughout all of the NERC Standards in order to move to the use of a single term. RAS and SPS have the same definition in the NERC Glossary of Terms.

Exhibit A-6

Proposed Reliability Standard PRC-006-4
Clean

A. Introduction

1. **Title:** Automatic Underfrequency Load Shedding
2. **Number:** PRC-006-4
3. **Purpose:** To establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.
4. **Applicability:**
 - 4.1. Planning Coordinators
 - 4.2. UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:
 - 4.2.1 Transmission Owners
 - 4.2.2 Distribution Providers
 - 4.2.3 UFLS-Only Distribution Providers
 - 4.3. Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators.
5. **Effective Date:**

See Implementation Plan

B. Requirements and Measures

- R1. Each Planning Coordinator shall develop and document criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES), including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*
- M1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement R1.
- R2. Each Planning Coordinator shall identify one or more islands to serve as a basis for designing its UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*
 - 2.1. Those islands selected by applying the criteria in Requirement R1, and

notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement R3, Parts 3.1 through 3.3.

- R4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- 4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - 4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - 4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - 4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - 4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - 4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - 4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement R4, Parts 4.1 through 4.7.
- R5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall coordinate its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island through one of the following: *[VRF: High][Time Horizon: Long-term Planning]*

- Develop a common UFLS program design and schedule for implementation per Requirement R3 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct a joint UFLS design assessment per Requirement R4 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct an independent UFLS design assessment per Requirement R4 for the identified island, and in the event the UFLS design assessment fails to meet Requirement R3, identify modifications to the UFLS program(s) to meet Requirement R3 and report these modifications as recommendations to the other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island and the ERO.
- M5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall have dated evidence such as joint UFLS program design documents, reports describing a joint UFLS design assessment, letters that include recommendations, or other dated documentation demonstrating that it coordinated its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island per Requirement R5.
- R6.** Each Planning Coordinator shall maintain a UFLS database containing data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M6.** Each Planning Coordinator shall have dated evidence such as a UFLS database, data requests, data input forms, or other dated documentation to show that it maintained a UFLS database for use in event analyses and assessments of the UFLS program per Requirement R6 at least once each calendar year, with no more than 15 months between maintenance activities.
- R7.** Each Planning Coordinator shall provide its UFLS database containing data necessary to model its UFLS program to other Planning Coordinators within its Interconnection within 30 calendar days of a request. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M7.** Each Planning Coordinator shall have dated evidence such as letters, memorandums, e-mails or other dated documentation that it provided their UFLS database to other Planning Coordinators within their Interconnection within 30 calendar days of a request per Requirement R7.
- R8.** Each UFLS entity shall provide data to its Planning Coordinator(s) according to the format and schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator's UFLS database. *[VRF: Lower][Time Horizon: Long-term Planning]*

- M8.** Each UFLS Entity shall have dated evidence such as responses to data requests, spreadsheets, letters or other dated documentation that it provided data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator to support maintenance of the UFLS database per Requirement R8.
- R9.** Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. *[VRF: High][Time Horizon: Long-term Planning]*
- M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays, spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, per Requirement R9.
- R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. *[VRF: High][Time Horizon: Long-term Planning]*
- M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.
- R11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- 11.1.** The performance of the UFLS equipment,
- 11.2.** The effectiveness of the UFLS program.
- M11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted an event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement R11.
- R12.** Each Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*

M12. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted a UFLS design assessment per Requirements R12 and R4 if UFLS program deficiencies are identified in R11.

R13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall coordinate its event assessment (in accordance with Requirement R11) with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event through one of the following: *[VRF: Medium][Time Horizon: Operations Assessment]*

- Conduct a joint event assessment per Requirement R11 among the Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 that reaches conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 and where the assessment fails to reach conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, identify differences in the assessments that likely resulted in the differences in the conclusions and recommendations and report these differences to the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event and the ERO.

M13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall have dated evidence such as a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations, or other dated documentation demonstrating it coordinated its event assessment (per Requirement R11) with all other Planning Coordinator(s) whose areas or portions of whose areas were also included in the same islanding event per Requirement R13.

R14. Each Planning Coordinator shall respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes will be made or reasons why changes will not be made to the following *[VRF: Lower][Time Horizon: Long-term Planning]*:

- 14.1.** UFLS program, including a schedule for implementation
 - 14.2.** UFLS design assessment
 - 14.3.** Format and schedule of UFLS data submittal
- M14.** Each Planning Coordinator shall have dated evidence of responses, such as e-mails and letters, to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program per Requirement R14.
- R15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [*VRF: High*][*Time Horizon: Long-term Planning*]
- 15.1.** For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.
 - 15.2.** For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.
- M15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

Each Planning Coordinator and UFLS entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Planning Coordinator shall retain the current evidence of Requirements R1, R2, R3, R4, R5, R12, R14, and R15, Measures M1, M2, M3, M4, M5, M12, M14, and M15 as well as any evidence necessary to show compliance since the last compliance audit.
- Each Planning Coordinator shall retain the current evidence of UFLS database update in accordance with Requirement R6, Measure M6, and evidence of the prior year’s UFLS database update.
- Each Planning Coordinator shall retain evidence of any UFLS database transmittal to another Planning Coordinator since the last compliance audit in accordance with Requirement R7, Measure M7.
- Each UFLS entity shall retain evidence of UFLS data transmittal to the Planning Coordinator(s) since the last compliance audit in accordance with Requirement R8, Measure M8.
- Each UFLS entity shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R9, Measure M9, and evidence of adherence since the last compliance audit.
- Transmission Owner shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R10, Measure M10, and evidence of adherence since the last compliance audit.
- Each Planning Coordinator shall retain evidence of Requirements R11, and R13, and Measures M11, and M13 for 6 calendar years.

If a Planning Coordinator or UFLS entity is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the retention period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Violation Investigation

Self-Reporting

Complaints

1.4. Additional Compliance Information

None

Violation Severity Levels

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|-----------|---|---|--|
| R1 | N/A | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands.</p> <p>OR</p> <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator failed to develop and document criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> |
| R2 | N/A | <p>The Planning Coordinator identified an island(s) to</p> | <p>The Planning Coordinator identified an island(s) to serve</p> | <p>The Planning Coordinator identified an island(s) to serve</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|--|---|
| | | <p>serve as a basis for designing its UFLS program but failed to include one (1) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include two (2) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include all of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) to serve as a basis for designing its UFLS program.</p> |
| R3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet one (1) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet two (2) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet all the performance characteristic in Requirement R3, Parts 3.1, 3.2, and 3.3 in simulations of underfrequency conditions.</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|---|---|---|---|
| | | | | including notification of and a schedule for implementation by UFLS entities within its area |
| R4 | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include one (1) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include two (2) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include three (3) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 but simulation failed to include four (4) or more of the items as specified in Requirement R4, Parts 4.1 through 4.7. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2 |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| R5 | N/A | N/A | N/A | The Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, failed to coordinate its UFLS program design through one of the manners described in Requirement R5. |
| R6 | N/A | N/A | N/A | The Planning Coordinator failed to maintain a UFLS database for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. |
| R7 | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 30 calendar days and up to and including 40 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 40 calendar days but less than and including 50 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 50 calendar days but less than and including 60 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 60 calendar days following the request. OR |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | The Planning Coordinator failed to provide its UFLS database to other Planning Coordinators. |
| R8 | The UFLS entity provided data to its Planning Coordinator(s) less than or equal to 10 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 10 calendar days but less than or equal to 15 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity provided data to its Planning Coordinator(s) but the data was not according to the format specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> | The UFLS entity provided data to its Planning Coordinator(s) more than 15 calendar days but less than or equal to 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity failed to provide data to its Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> |
| R9 | The UFLS entity provided less than 100% but more than (and including) 95% of automatic tripping of Load in accordance with the UFLS | The UFLS entity provided less than 95% but more than (and including) 90% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 90% but more than (and including) 85% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 85% of automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|---|--|--|--|
| | program design and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. |
| R10 | The Transmission Owner provided less than 100% but more than (and including) 95% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 95% but more than (and including) 90% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 90% but more than (and including) 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. |
| R11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate one (1) of the Parts as specified in Requirement R11, Parts 11.1 or 11.2.</p> | <p>conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to conduct and document an assessment of the event and evaluate the Parts as specified in Requirement R11, Parts 11.1 and 11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate all of the Parts</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|--|
| | | | | as specified in Requirement R11, Parts 11.1 and 11.2. |
| R12 | N/A | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than two years but less than or equal to 25 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 25 months but less than or equal to 26 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 26 months of event actuation. OR The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, failed to conduct and document a UFLS design assessment to consider the identified deficiencies. |
| R13 | N/A | N/A | N/A | The Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--|--|---|
| | | | | <p>program, failed to coordinate its UFLS event assessment with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event in one of the manners described in Requirement R13</p> |
| R14 | N/A | N/A | N/A | <p>The Planning Coordinator failed to respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes were made or reasons why changes were not made to the items in Parts 14.1 through 14.3.</p> |
| R15 | N/A | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|--|--|
| | | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.</p> | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.</p> | <p>R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area.</p> <p>OR</p> <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p> |

D. Regional Variances

D.A. Regional Variance for the Quebec Interconnection

The following Interconnection-wide variance shall be applicable in the Quebec Interconnection and replaces, in their entirety, Requirements R3 and R4 and the violation severity levels associated with Requirements R3 and R4.

Rationale for Requirement D.A.3:

There are two modifications for requirement D.A.3 :

1. 25% Generation Deficiency : Since the Quebec Interconnection has no potential viable BES Island in underfrequency conditions, the largest generation deficiency scenarios are limited to extreme contingencies not already covered by RAS.

Based on Hydro-Québec TransÉnergie Transmission Planning requirements, the stability of the network shall be maintained for extreme contingencies using a case representing internal transfers not expected to be exceeded 25% of the time.

The Hydro-Québec TransÉnergie defense plan to cover these extreme contingencies includes two RAS (RPTC- generation rejection and remote load shedding and TDST - a centralized UVLS) and the UFLS.

2. Frequency performance curve (attachment 1A) : Specific cases where a small generation deficiency using a peak case scenario with the minimum requirement of spinning reserve can lead to an acceptable frequency deviation in the Quebec Interconnection while stabilizing between the PRC-006-2 requirement (59.3 Hz) and the UFLS anti-stall threshold (59.0 Hz).

An increase of the anti-stall threshold to 59.3 Hz would correct this situation but would cause frequent load shedding of customers without any gain of system reliability. Therefore, it is preferable to lower the steady state frequency minimum value to 59.0 Hz.

The delay in the performance characteristics curve is harmonized between D.A.3 and R.3 to 60 seconds.

Rationale for Requirements D.A.3.3. and D.A.4:

The Quebec Interconnection has its own definition of BES. In Quebec, the vast majority of BES generating plants/facilities are not directly connected to the BES. For simulations to take into account sufficient generating resources D.A.3.3 and D.A.4 need simply refer to BES generators, plants or facilities since these are listed in a Registry approved by Québec's Regulatory Body (Régie de l'Énergie).

- D.A.3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from each of these extreme events:

- Loss of the entire capability of a generating station.
- Loss of all transmission circuits emanating from a generating station, switching station, substation or dc terminal.
- Loss of all transmission circuits on a common right-of-way.
- Three-phase fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.
- Three-phase fault on a circuit breaker, with normal fault clearing.
- The operation or partial operation of a RAS for an event or condition for which it was not intended to operate.

[VRF: High][Time Horizon: Long-term Planning]

- D.A.3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
 - D.A.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
 - D.A.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each Quebec BES generator bus and associated generator step-up transformer high-side bus
- M.D.A.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.A.3 Parts D.A.3.1 through D.A.3.3.
- D.A.4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 for each island identified in Requirement R2. The simulation shall model each of the following; *[VRF: High][Time Horizon: Long-term Planning]*
- D.A.4.1** Underfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip above the Generator

Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1A,
and

D.A.4.2 Overfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 - Attachment 1A,
and

D.A.4.3 Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.

M.D.A.4. Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement D.A.4 Parts D.A.4.1 through D.A.4.3.

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|--|
| DA3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Parts D.A.3.1, D.A.3.2, and D.A.3.3 in simulations of underfrequency conditions</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| DA4 | N/A | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include one (1) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include two (2) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include all of the items as</p> |

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----|-----------|---|---|--|
| | | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 and D.A.4.3. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 |

D.B. Regional Variance for the Western Electricity Coordinating Council

The following Interconnection-wide variance shall be applicable in the Western Electricity Coordinating Council (WECC) and replaces, in their entirety, Requirements R1, R2, R3, R4, R5, R11, R12, and R13.

D.B.1. Each Planning Coordinator shall participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that develops and documents criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES) that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*

M.D.B.1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria, developed as part of the joint regional review with other Planning Coordinators in the WECC Regional Entity area to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement D.B.1.

D.B.2. Each Planning Coordinator shall identify one or more islands from the regional review (per D.B.1) to serve as a basis for designing a region-wide coordinated UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*

D.B.2.1. Those islands selected by applying the criteria in Requirement D.B.1, and

D.B.2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System.

M.D.B.2. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s), from the regional review (per D.B.1), as a basis for designing a region-wide coordinated UFLS program that meet the criteria in Requirement D.B.2 Parts D.B.2.1 and D.B.2.2.

D.B.3. Each Planning Coordinator shall adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*

D.B.3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- D.B.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
- D.B.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - D.B.3.3.1.** Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - D.B.3.3.2.** Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - D.B.3.3.3.** Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M.D.B.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its adoption of a UFLS program, coordinated across the WECC Regional Entity area, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.B.3 Parts D.B.3.1 through D.B.3.3.
- D.B.4.** Each Planning Coordinator shall participate in and document a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
 - D.B.4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - D.B.4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - D.B.4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the

Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.

- D.B.4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - D.B.4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - D.B.4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - D.B.4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.B.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its participation in a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area that demonstrates it meets Requirement D.B.4 Parts D.B.4.1 through D.B.4.7.
- D.B.11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall participate in and document a coordinated event assessment with all affected Planning Coordinators to conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- D.B.11.1.** The performance of the UFLS equipment,
 - D.B.11.2** The effectiveness of the UFLS program
- M.D.B.11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a coordinated event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement D.B.11.
- D.B.12.** Each Planning Coordinator, in whose islanding event assessment (per D.B.11) UFLS program deficiencies are identified, shall participate in and document a coordinated UFLS design assessment of the UFLS program with the other

Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*

- M.D.B.12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a UFLS design assessment per Requirements D.B.12 and D.B.4 if UFLS program deficiencies are identified in D.B.11.

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|-----------|--|---|--|
| D.B.1 | N/A | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> <p>OR</p> <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator failed to participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas that may form islands</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|-----------|--|--|--|
| D.B.2 | N/A | N/A | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include one (1) of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include all of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) from the regional review to serve as a basis for designing its UFLS program.</p> |
| D.B.3 | N/A | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, and D.B.3.3 in simulations of underfrequency conditions</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|---------------------|---|---|---|--|
| | | | | <p>OR</p> <p>The Planning Coordinator failed to adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| <p>D.B.4</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include one (1) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include two (2) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include three (3) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include four (4) or more of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> <p>OR</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----------------------|---|--|--|--|
| | | | | <p>The Planning Coordinator failed to participate in and document a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2</p> |
| <p>D.B.11</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than one year but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 13 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 14 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| | less than or equal to 13 months of actuation. | less than or equal to 14 months of actuation. | less than or equal to 15 months of actuation. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate one (1) of the parts as specified in Requirement D.B.11, Parts D.B.11.1 or D.B.11.2. | time greater than 15 months of actuation. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to participate in and document a coordinated event assessment with all Planning Coordinators whose areas or portion of whose areas were also included in the same island event and evaluate the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | <p>in the same islanding event within one year of event actuation but failed to evaluate all of the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> |
| <p>D.B.12</p> | <p>N/A</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than two years but less than or equal to 25 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 25 months but less than or equal to 26 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 26 months of event actuation.</p> <p>OR</p> <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, failed to participate in and document a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--------------|----------|---|
| | | | | to consider the identified deficiencies |

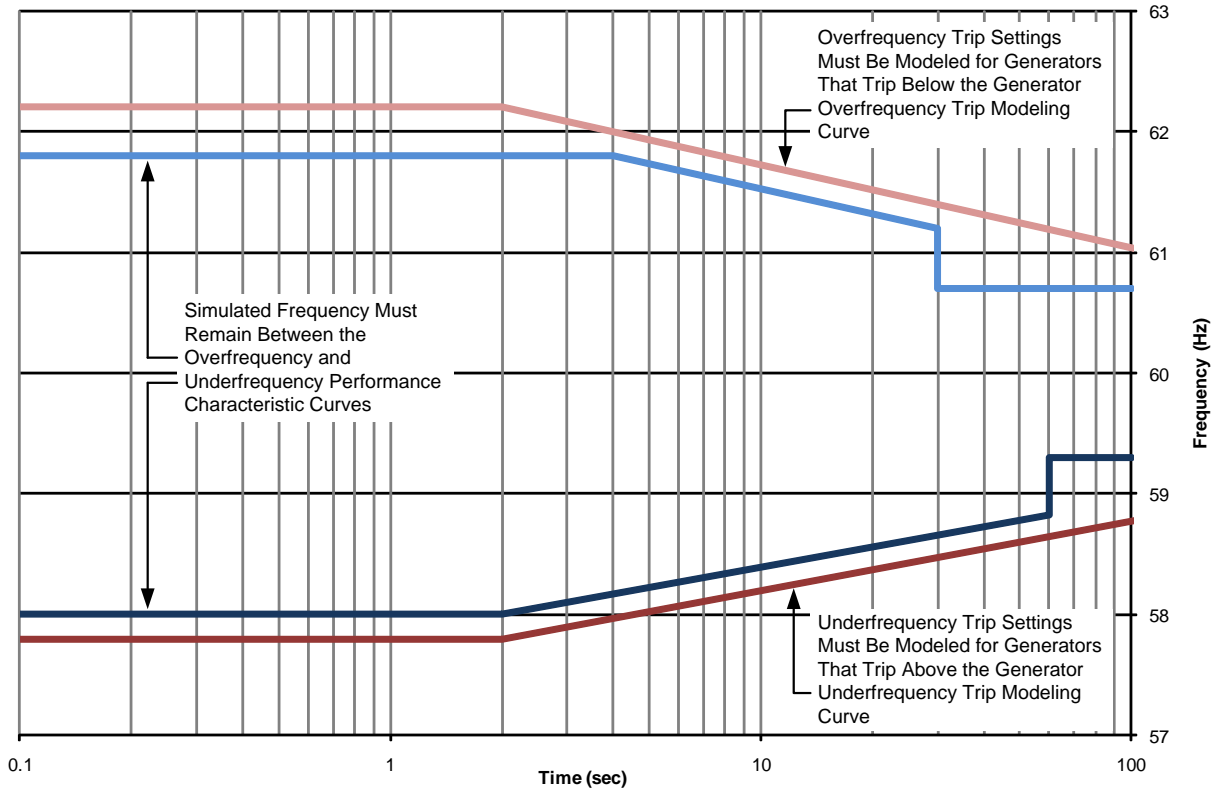
E. Associated Documents

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | May 25, 2010 | Completed revision, merging and updating PRC-006-0, PRC-007-0 and PRC-009-0. | |
| 1 | November 4, 2010 | Adopted by the Board of Trustees | |
| 1 | May 7, 2012 | FERC Order issued approving PRC-006-1 (approval becomes effective July 10, 2012) | |
| 1 | November 9, 2012 | FERC Letter Order issued accepting the modification of the VRF in R5 from (Medium to High) and the modification of the VSL language in R8. | |
| 2 | November 13, 2014 | Adopted by the Board of Trustees | Revisions made under Project 2008-02: Undervoltage Load Shedding (UVLS) & Underfrequency Load Shedding (UFLS) to address directive issued in FERC Order No. 763. Revisions to existing Requirement R9 and R10 and addition of new Requirement R15. |
| 3 | August 10, 2017 | Adopted by the NERC Board of Trustees | Revisions to the Regional Variance for the Quebec Interconnection. |
| 4 | February 6, 2020 | Adopted by NERC Board of Trustees | Revisions under Project 2017-07 |

PRC-006-4 – Attachment 1

Underfrequency Load Shedding Program
 Design Performance and Modeling Curves for
 Requirements R3 Parts 3.1-3.2 and R4 Parts 4.1-4.6



- Generator Overfrequency Trip Modeling (Requirement R4 Parts 4.4-4.6)
- Overfrequency Performance Characteristic (Requirement R3 Part 3.2)
- Underfrequency Performance Characteristic (Requirement R3 Part 3.1)
- Generator Underfrequency Trip Modeling (Requirement R4 Parts 4.1-4.3)

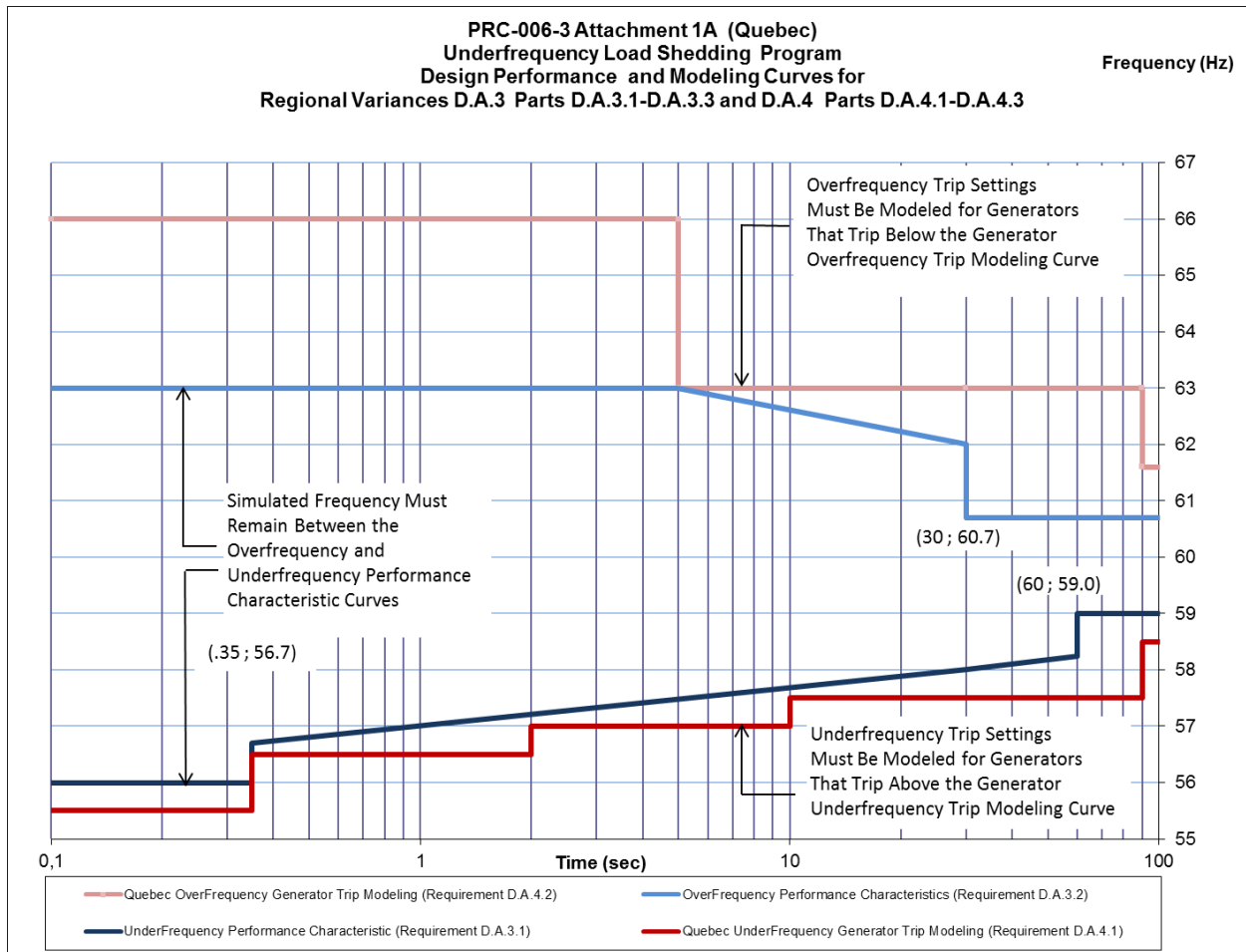
Curve Definitions

| Generator Overfrequency Trip Modeling | | Overfrequency Performance Characteristic | | |
|---------------------------------------|--|--|--|-----------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 4 \text{ s}$ | $4 \text{ s} < t \leq 30 \text{ s}$ | $t > 30 \text{ s}$ |
| $f = 62.2 \text{ Hz}$ | $f = -0.686\log(t) + 62.41 \text{ Hz}$ | $f = 61.8 \text{ Hz}$ | $f = -0.686\log(t) + 62.21 \text{ Hz}$ | $f = 60.7 \text{ Hz}$ |

| | |
|--|---|
| Generator Underfrequency Trip Modeling | Underfrequency Performance Characteristic |
|--|---|

PRC-006-4 — Automatic Underfrequency Load Shedding

| | | | | |
|----------------------|----------------------------------|----------------------|-------------------------------------|--------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 2 \text{ s}$ | $2 \text{ s} < t \leq 60 \text{ s}$ | $t > 60 \text{ s}$ |
| $f = 57.8$ Hz | $f = 0.575\log(t) + 57.63$ Hz | $f = 58.0$ Hz | $f = 0.575\log(t) + 57.83$ Hz | $f = 59.3$ Hz |



Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R9:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a Planning Coordinator (PC) assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R10:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R15:

Requirement R15 was added in response to the directive from FERC Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. Requirement R15 addresses the FERC directive by making explicit that if deficiencies are identified as a result of an assessment, the PC shall develop a Corrective Action Plan and schedule for implementation by the UFLS entities.

A “Corrective Action Plan” is defined in the NERC Glossary of Terms as, “a list of actions and an associated timetable for implementation to remedy a specific problem.” Thus, the Corrective Action Plan developed by the PC will identify the specific timeframe for an entity to implement corrections to remedy any deficiencies identified by the PC as a result of an assessment.

Exhibit A-6

Proposed Reliability Standard PRC-006-4
Redline to Last Approved (PRC-006-3)

A. Introduction

1. **Title:** Automatic Underfrequency Load Shedding
2. **Number:** PRC-006-~~3-4~~
3. **Purpose:** To establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.
4. **Applicability:**
 - 4.1. Planning Coordinators
 - 4.2. UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:
 - 4.2.1 Transmission Owners
 - ~~4.2.2~~ ~~4.2.2~~ Distribution Providers
 - 4.2.3 UFLS-Only Distribution Providers[±]
 - 4.3. Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators.
5. **Effective Date:**

See Implementation Plan

~~This standard is effective on the first day of the first calendar quarter six months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

~~6. Background:~~

~~PRC-006-2 was developed under Project 2008-02: Underfrequency Load Shedding (UFLS). The drafting team revised PRC-006-1 for the purpose of addressing the directive issued in FERC Order No. 763, *Automatic Underfrequency Load Shedding and Load Shedding Plans Reliability Standards*, 139 FERC ¶ 61,098 (2012).~~

[±]~~NERC Rules of Procedure, Appendix 5~~

~~https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC_ROP_Effective_20160504.pdf~~

E.B. Requirements and Measures

- R1.** Each Planning Coordinator shall develop and document criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES), including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands. [*VRF: Medium*][*Time Horizon: Long-term Planning*]
- M1.** Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement R1.
- R2.** Each Planning Coordinator shall identify one or more islands to serve as a basis for designing its UFLS program including: [*VRF: Medium*][*Time Horizon: Long-term Planning*]
- 2.1.** Those islands selected by applying the criteria in Requirement R1, and
 - 2.2.** Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System, and
 - 2.3.** A single island that includes all portions of the BES in either the Regional Entity area or the Interconnection in which the Planning Coordinator's area resides. If a Planning Coordinator's area resides in multiple Regional Entity areas, each of those Regional Entity areas shall be identified as an island. Planning Coordinators may adjust island boundaries to differ from Regional Entity area boundaries by mutual consent where necessary for the sole purpose of producing contiguous regional islands more suitable for simulation.
- M2.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s) as a basis for designing a UFLS program that meet the criteria in Requirement R2, Parts 2.1 through 2.3.
- R3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). [*VRF: High*][*Time Horizon: Long-term Planning*]
- 3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-~~3~~4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
 - 3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-~~3~~4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- 3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
- Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement R3, Parts 3.1 through 3.3.
- R4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- 4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
- 4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
- 4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
- 4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.
- 4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.

- 4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.
- 4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement R4, Parts 4.1 through 4.7.
- R5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall coordinate its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island through one of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- Develop a common UFLS program design and schedule for implementation per Requirement R3 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct a joint UFLS design assessment per Requirement R4 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct an independent UFLS design assessment per Requirement R4 for the identified island, and in the event the UFLS design assessment fails to meet Requirement R3, identify modifications to the UFLS program(s) to meet Requirement R3 and report these modifications as recommendations to the other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island and the ERO.
- M5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall have dated evidence such as joint UFLS program design documents, reports describing a joint UFLS design assessment, letters that include recommendations, or other dated documentation demonstrating that it coordinated its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island per Requirement R5.
- R6.** Each Planning Coordinator shall maintain a UFLS database containing data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. *[VRF: Lower][Time Horizon: Long-term Planning]*

- M6.** Each Planning Coordinator shall have dated evidence such as a UFLS database, data requests, data input forms, or other dated documentation to show that it maintained a UFLS database for use in event analyses and assessments of the UFLS program per Requirement R6 at least once each calendar year, with no more than 15 months between maintenance activities.
- R7.** Each Planning Coordinator shall provide its UFLS database containing data necessary to model its UFLS program to other Planning Coordinators within its Interconnection within 30 calendar days of a request. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M7.** Each Planning Coordinator shall have dated evidence such as letters, memorandums, e-mails or other dated documentation that it provided their UFLS database to other Planning Coordinators within their Interconnection within 30 calendar days of a request per Requirement R7.
- R8.** Each UFLS entity shall provide data to its Planning Coordinator(s) according to the format and schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator's UFLS database. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M8.** Each UFLS Entity shall have dated evidence such as responses to data requests, spreadsheets, letters or other dated documentation that it provided data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator to support maintenance of the UFLS database per Requirement R8.
- R9.** Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. *[VRF: High][Time Horizon: Long-term Planning]*
- M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays, spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, per Requirement R9.
- R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. *[VRF: High][Time Horizon: Long-term Planning]*
- M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.

- R11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- 11.1.** The performance of the UFLS equipment,
 - 11.2.** The effectiveness of the UFLS program.
- M11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted an event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement R11.
- R12.** Each Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*
- M12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted a UFLS design assessment per Requirements R12 and R4 if UFLS program deficiencies are identified in R11.
- R13.** Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall coordinate its event assessment (in accordance with Requirement R11) with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event through one of the following: *[VRF: Medium][Time Horizon: Operations Assessment]*
- Conduct a joint event assessment per Requirement R11 among the Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
 - Conduct an independent event assessment per Requirement R11 that reaches conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
 - Conduct an independent event assessment per Requirement R11 and where the assessment fails to reach conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, identify differences in the assessments that likely resulted in the differences in the conclusions and recommendations and report these differences to the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event and the ERO.

- M13.** Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall have dated evidence such as a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations, or other dated documentation demonstrating it coordinated its event assessment (per Requirement R11) with all other Planning Coordinator(s) whose areas or portions of whose areas were also included in the same islanding event per Requirement R13.
- R14.** Each Planning Coordinator shall respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes will be made or reasons why changes will not be made to the following [*VRF: Lower*][*Time Horizon: Long-term Planning*]:
- 14.1.** UFLS program, including a schedule for implementation
 - 14.2.** UFLS design assessment
 - 14.3.** Format and schedule of UFLS data submittal
- M14.** Each Planning Coordinator shall have dated evidence of responses, such as e-mails and letters, to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program per Requirement R14.
- R15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [*VRF: High*][*Time Horizon: Long-term Planning*]
- 15.1.** For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.
 - 15.2.** For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.
- M15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

F.C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

Each Planning Coordinator and UFLS entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Planning Coordinator shall retain the current evidence of Requirements R1, R2, R3, R4, R5, R12, R14, and R15, Measures M1, M2, M3, M4, M5, M12, M14, and M15 as well as any evidence necessary to show compliance since the last compliance audit.
- Each Planning Coordinator shall retain the current evidence of UFLS database update in accordance with Requirement R6, Measure M6, and evidence of the prior year’s UFLS database update.
- Each Planning Coordinator shall retain evidence of any UFLS database transmittal to another Planning Coordinator since the last compliance audit in accordance with Requirement R7, Measure M7.
- Each UFLS entity shall retain evidence of UFLS data transmittal to the Planning Coordinator(s) since the last compliance audit in accordance with Requirement R8, Measure M8.
- Each UFLS entity shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R9, Measure M9, and evidence of adherence since the last compliance audit.
- Transmission Owner shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R10, Measure M10, and evidence of adherence since the last compliance audit.
- Each Planning Coordinator shall retain evidence of Requirements R11, and R13, and Measures M11, and M13 for 6 calendar years.

If a Planning Coordinator or UFLS entity is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the retention period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Violation Investigation

Self-Reporting

Complaints

1.4. Additional Compliance Information

None

2. Violation Severity Levels

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|-----------|---|---|--|
| R1 | N/A | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands.</p> <p>OR</p> <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator failed to develop and document criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> |
| R2 | N/A | <p>The Planning Coordinator identified an island(s) to</p> | <p>The Planning Coordinator identified an island(s) to serve</p> | <p>The Planning Coordinator identified an island(s) to serve</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------------|------------|---|--|---|
| | | <p>serve as a basis for designing its UFLS program but failed to include one (1) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include two (2) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include all of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) to serve as a basis for designing its UFLS program.</p> |
| <p>R3</p> | <p>N/A</p> | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet one (1) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet two (2) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet all the performance characteristic in Requirement R3, Parts 3.1, 3.2, and 3.3 in simulations of underfrequency conditions.</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|---|---|---|---|
| | | | | including notification of and a schedule for implementation by UFLS entities within its area |
| R4 | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include one (1) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include two (2) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include three (3) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 but simulation failed to include four (4) or more of the items as specified in Requirement R4, Parts 4.1 through 4.7. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2 |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| R5 | N/A | N/A | N/A | The Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, failed to coordinate its UFLS program design through one of the manners described in Requirement R5. |
| R6 | N/A | N/A | N/A | The Planning Coordinator failed to maintain a UFLS database for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. |
| R7 | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 30 calendar days and up to and including 40 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 40 calendar days but less than and including 50 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 50 calendar days but less than and including 60 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 60 calendar days following the request. OR |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|--|---|---|---|
| | | | | The Planning Coordinator failed to provide its UFLS database to other Planning Coordinators. |
| R8 | The UFLS entity provided data to its Planning Coordinator(s) less than or equal to 10 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 10 calendar days but less than or equal to 15 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity provided data to its Planning Coordinator(s) but the data was not according to the format specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> | The UFLS entity provided data to its Planning Coordinator(s) more than 15 calendar days but less than or equal to 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity failed to provide data to its Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> |
| R9 | The UFLS entity provided less than 100% but more than (and including) 95% of automatic tripping of Load in accordance with the UFLS | The UFLS entity provided less than 95% but more than (and including) 90% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 90% but more than (and including) 85% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 85% of automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, |

Standard PRC-006-3.4 — Automatic Underfrequency Load Shedding

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|---|--|--|--|
| | program design and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. |
| R10 | The Transmission Owner provided less than 100% but more than (and including) 95% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 95% but more than (and including) 90% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 90% but more than (and including) 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. |
| R11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|--|--|--|
| | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate one (1) of the Parts as specified in Requirement R11, Parts 11.1 or 11.2.</p> | <p>conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to conduct and document an assessment of the event and evaluate the Parts as specified in Requirement R11, Parts 11.1 and 11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate all of the Parts</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|--|
| | | | | as specified in Requirement R11, Parts 11.1 and 11.2. |
| R12 | N/A | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than two years but less than or equal to 25 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 25 months but less than or equal to 26 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 26 months of event actuation. OR The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, failed to conduct and document a UFLS design assessment to consider the identified deficiencies. |
| R13 | N/A | N/A | N/A | The Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|---|
| | | | | <p>program, failed to coordinate its UFLS event assessment with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event in one of the manners described in Requirement R13</p> |
| R14 | N/A | N/A | N/A | <p>The Planning Coordinator failed to respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes were made or reasons why changes were not made to the items in Parts 14.1 through 14.3.</p> |
| R15 | N/A | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> |

Standard PRC-006-3.4 — Automatic Underfrequency Load Shedding

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|--|--|
| | | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.</p> | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.</p> | <p>R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area.</p> <p>OR</p> <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p> |

D. Regional Variances

D.A. Regional Variance for the Quebec Interconnection

The following Interconnection-wide variance shall be applicable in the Quebec Interconnection and replaces, in their entirety, Requirements R3 and R4 and the violation severity levels associated with Requirements R3 and R4.

Rationale for Requirement D.A.3:

There are two modifications for requirement D.A.3 :

1. 25% Generation Deficiency : Since the Quebec Interconnection has no potential viable BES Island in underfrequency conditions, the largest generation deficiency scenarios are limited to extreme contingencies not already covered by RAS.

Based on Hydro-Québec TransÉnergie Transmission Planning requirements, the stability of the network shall be maintained for extreme contingencies using a case representing internal transfers not expected to be exceeded 25% of the time.

The Hydro-Québec TransÉnergie defense plan to cover these extreme contingencies includes two RAS (RPTC- generation rejection and remote load shedding and TDST - a centralized UVLS) and the UFLS.

2. Frequency performance curve (attachment 1A) : Specific cases where a small generation deficiency using a peak case scenario with the minimum requirement of spinning reserve can lead to an acceptable frequency deviation in the Quebec Interconnection while stabilizing between the PRC-006-2 requirement (59.3 Hz) and the UFLS anti-stall threshold (59.0 Hz).

An increase of the anti-stall threshold to 59.3 Hz would correct this situation but would cause frequent load shedding of customers without any gain of system reliability. Therefore, it is preferable to lower the steady state frequency minimum value to 59.0 Hz.

The delay in the performance characteristics curve is harmonized between D.A.3 and R.3 to 60 seconds.

Rationale for Requirements D.A.3.3. and D.A.4:

The Quebec Interconnection has its own definition of BES. In Quebec, the vast majority of BES generating plants/facilities are not directly connected to the BES. For simulations to take into account sufficient generating resources D.A.3.3 and D.A.4 need simply refer to BES generators, plants or facilities since these are listed in a Registry approved by Québec's Regulatory Body (Régie de l'Énergie).

D.A.3. Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that

meets the following performance characteristics in simulations of underfrequency conditions resulting from each of these extreme events:

- Loss of the entire capability of a generating station.
- Loss of all transmission circuits emanating from a generating station, switching station, substation or dc terminal.
- Loss of all transmission circuits on a common right-of-way.
- Three-phase fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.
- Three-phase fault on a circuit breaker, with normal fault clearing.
- The operation or partial operation of a RAS for an event or condition for which it was not intended to operate.

[VRF: High][Time Horizon: Long-term Planning]

- D.A.3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3.4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3.4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each Quebec BES generator bus and associated generator step-up transformer high-side bus

M.D.A.3. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.A.3 Parts D.A.3.1 through D.A.3.3.

D.A.4. Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 for each island identified in Requirement

R2. The simulation shall model each of the following; [*VRF: High*][*Time Horizon: Long-term Planning*]

D.A.4.1 Underfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3~~4 - Attachment 1A, and

D.A.4.2 Overfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3~~4 - Attachment 1A, and

D.A.4.3 Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.

M.D.A.4. Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement D.A.4 Parts D.A.4.1 through D.A.4.3.

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|---|---|---|
| DA3 | N/A | The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions | The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions | The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Parts D.A.3.1, D.A.3.2, and D.A.3.3 in simulations of underfrequency conditions OR The Planning Coordinator failed to develop a UFLS program including notification of and a schedule for implementation by UFLS entities within its area. |
| DA4 | N/A | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include one (1) of the items as | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include two (2) of the items as | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include all of the items as |

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----|-----------|---|---|--|
| | | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 and D.A.4.3. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 |

D.B. Regional Variance for the Western Electricity Coordinating Council

The following Interconnection-wide variance shall be applicable in the Western Electricity Coordinating Council (WECC) and replaces, in their entirety, Requirements R1, R2, R3, R4, R5, R11, R12, and R13.

D.B.1. Each Planning Coordinator shall participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that develops and documents criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES) that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*

M.D.B.1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria, developed as part of the joint regional review with other Planning Coordinators in the WECC Regional Entity area to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement D.B.1.

D.B.2. Each Planning Coordinator shall identify one or more islands from the regional review (per D.B.1) to serve as a basis for designing a region-wide coordinated UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*

D.B.2.1. Those islands selected by applying the criteria in Requirement D.B.1, and

D.B.2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System.

M.D.B.2. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s), from the regional review (per D.B.1), as a basis for designing a region-wide coordinated UFLS program that meet the criteria in Requirement D.B.2 Parts D.B.2.1 and D.B.2.2.

D.B.3. Each Planning Coordinator shall adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*

D.B.3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-~~3-4~~ - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- D.B.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3.4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
- D.B.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - D.B.3.3.1.** Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - D.B.3.3.2.** Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - D.B.3.3.3.** Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M.D.B.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its adoption of a UFLS program, coordinated across the WECC Regional Entity area, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.B.3 Parts D.B.3.1 through D.B.3.3.
- D.B.4.** Each Planning Coordinator shall participate in and document a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
 - D.B.4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
 - D.B.4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
 - D.B.4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation

above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3.4~~ - Attachment 1.

- D.B.4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3.4~~ — Attachment 1.
- D.B.4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3.4~~ — Attachment 1.
- D.B.4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3.4~~ — Attachment 1.
- D.B.4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.

M.D.B.4. Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its participation in a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area that demonstrates it meets Requirement D.B.4 Parts D.B.4.1 through D.B.4.7.

D.B.11. Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall participate in and document a coordinated event assessment with all affected Planning Coordinators to conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*

D.B.11.1. The performance of the UFLS equipment,

D.B.11.2 The effectiveness of the UFLS program

M.D.B.11. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a coordinated event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement D.B.11.

- D.B.12.** Each Planning Coordinator, in whose islanding event assessment (per D.B.11) UFLS program deficiencies are identified, shall participate in and document a coordinated UFLS design assessment of the UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*
- M.D.B.12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a UFLS design assessment per Requirements D.B.12 and D.B.4 if UFLS program deficiencies are identified in D.B.11.

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-------|-----------|--|---|--|
| D.B.1 | N/A | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> <p>OR</p> <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator failed to participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas that may form islands</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|-----------|---|--|--|
| D.B.2 | N/A | N/A | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include one (1) of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include all of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) from the regional review to serve as a basis for designing its UFLS program.</p> |
| D.B.3 | N/A | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, and D.B.3.3 in</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|--|--|--|--|
| | | simulations of underfrequency conditions | | simulations of underfrequency conditions OR The Planning Coordinator failed to adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area. |
| D.B.4 | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include one (1) of the items as specified in Requirement | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include two (2) of the items as specified in | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include three (3) of the items as specified in | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include four (4) or more of the items as |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|---------------|---|--|--|---|
| | D.B.4, Parts D.B.4.1 through D.B.4.7. | Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. | Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. | specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. OR The Planning Coordinator failed to participate in and document a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 |
| D.B.11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| | <p>same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate one (1) of the parts as specified in Requirement D.B.11, Parts D.B.11.1 or D.B.11.2.</p> | <p>evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to participate in and document a coordinated event assessment with all Planning Coordinators whose areas or portion of whose areas were also included in the same island event and evaluate the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|---------------|-----------|---|---|--|
| | | | | <p>a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate all of the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> |
| D.B.12 | N/A | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than two years but less than or equal to 25 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 25 months but less than or equal to 26 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 26 months of event actuation.</p> <p>OR</p> <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, failed to participate in</p> |

Standard PRC-006-3.4 — Automatic Underfrequency Load Shedding

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--------------|----------|---|
| | | | | and document a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies |

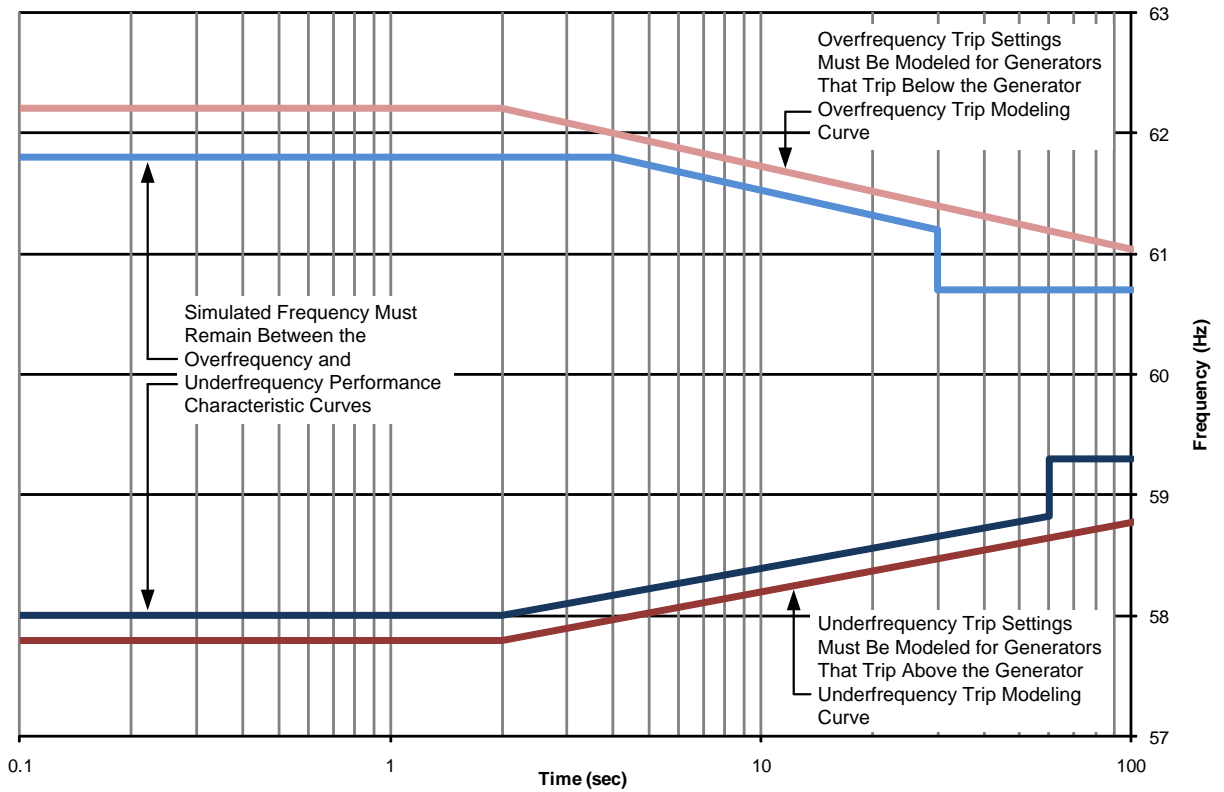
E. Associated Documents

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|---|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | May 25, 2010 | Completed revision, merging and updating PRC-006-0, PRC-007-0 and PRC-009-0. | |
| 1 | November 4, 2010 | Adopted by the Board of Trustees | |
| 1 | May 7, 2012 | FERC Order issued approving PRC-006-1 (approval becomes effective July 10, 2012) | |
| 1 | November 9, 2012 | FERC Letter Order issued accepting the modification of the VRF in R5 from (Medium to High) and the modification of the VSL language in R8. | |
| 2 | November 13, 2014 | Adopted by the Board of Trustees | Revisions made under Project 2008-02: Undervoltage Load Shedding (UVLS) & Underfrequency Load Shedding (UFLS) to address directive issued in FERC Order No. 763. Revisions to existing Requirement R9 and R10 and addition of new Requirement R15. |
| 3 | August 10, 2017 | Adopted by the NERC Board of Trustees | Revisions to the Regional Variance for the Quebec Interconnection. |
| <u>4</u> | February 6, 2020 | <u>Adopted by NERC Board of Trustees</u> | Revisions under Project 2017-07 |

PRC-006-3.4 – Attachment 1

Underfrequency Load Shedding Program
 Design Performance and Modeling Curves for
 Requirements R3 Parts 3.1-3.2 and R4 Parts 4.1-4.6



- Generator Overfrequency Trip Modeling (Requirement R4 Parts 4.4-4.6)
- Overfrequency Performance Characteristic (Requirement R3 Part 3.2)
- Underfrequency Performance Characteristic (Requirement R3 Part 3.1)
- Generator Underfrequency Trip Modeling (Requirement R4 Parts 4.1-4.3)

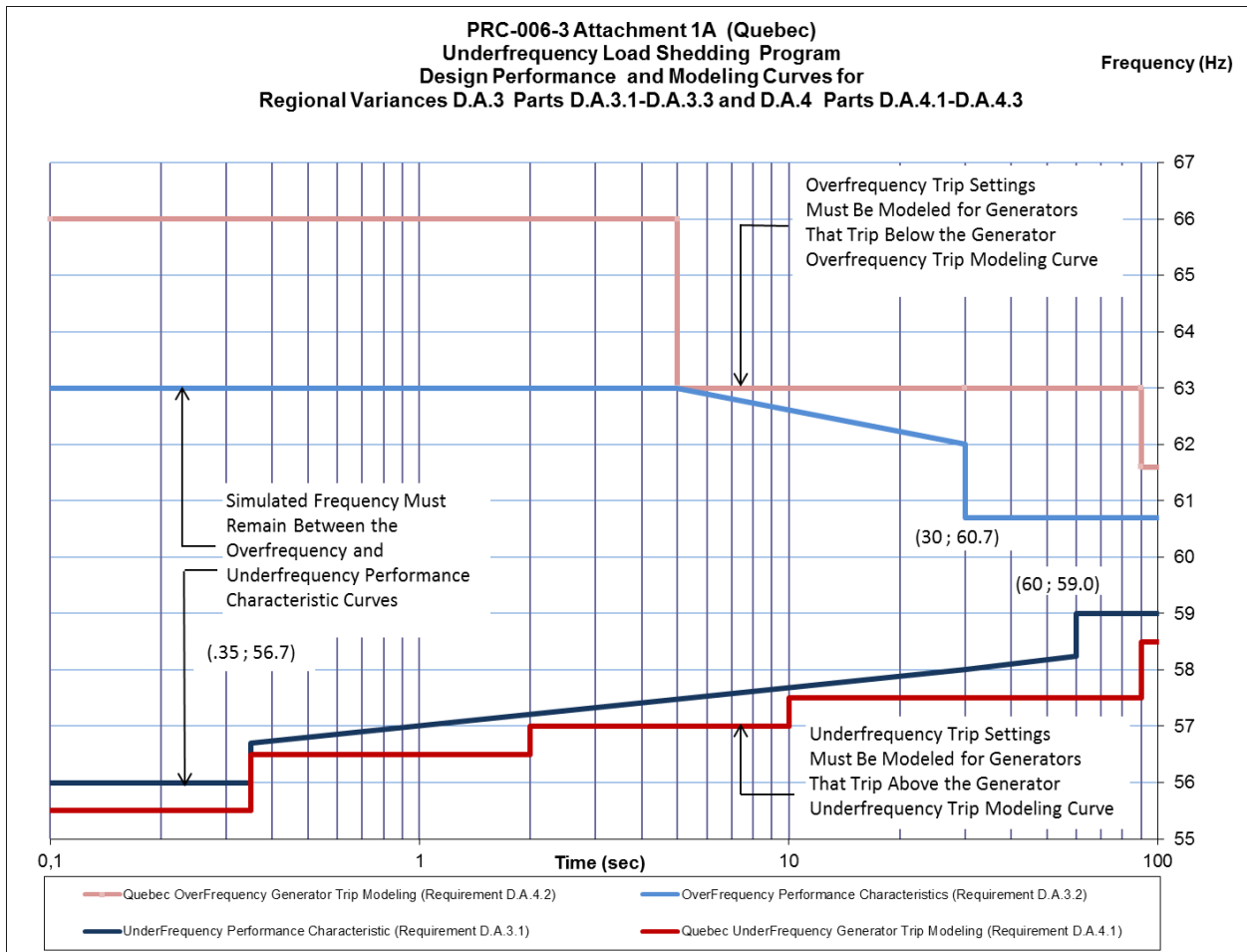
Curve Definitions

| Generator Overfrequency Trip Modeling | | Overfrequency Performance Characteristic | | |
|---------------------------------------|-------------------|--|-------------------------------------|--------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 4 \text{ s}$ | $4 \text{ s} < t \leq 30 \text{ s}$ | $t > 30 \text{ s}$ |

Standard PRC-006-3.4 — Automatic Underfrequency Load Shedding

| | | | | |
|----------------|--------------------------------|----------------|--------------------------------|----------------|
| f = 62.2 Hz | f = -0.686log(t) + 62.41 Hz | f = 61.8 Hz | f = -0.686log(t) + 62.21 Hz | f = 60.7 Hz |
|----------------|--------------------------------|----------------|--------------------------------|----------------|

| Generator Underfrequency Trip Modeling | | Underfrequency Performance Characteristic | | |
|--|-------------------------------|---|-------------------------------|----------------|
| t ≤ 2 s | t > 2 s | t ≤ 2 s | 2 s < t ≤ 60 s | t > 60 s |
| f = 57.8 Hz | f = 0.575log(t) + 57.63 Hz | f = 58.0 Hz | f = 0.575log(t) + 57.83 Hz | f = 59.3 Hz |



Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R9:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a Planning Coordinator (PC) assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R10:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R15:

Requirement R15 was added in response to the directive from FERC Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. Requirement R15 addresses the FERC directive by making explicit that if deficiencies are identified as a result of an assessment, the PC shall develop a Corrective Action Plan and schedule for implementation by the UFLS entities.

A “Corrective Action Plan” is defined in the NERC Glossary of Terms as, “a list of actions and an associated timetable for implementation to remedy a specific problem.” Thus, the Corrective Action Plan developed by the PC will identify the specific timeframe for an entity to implement corrections to remedy any deficiencies identified by the PC as a result of an assessment.

Exhibit A-7

Proposed Reliability Standard TOP-003-4
Clean

A. Introduction

1. **Title: Operational Reliability Data**
2. **Number: TOP-003-4**
3. **Purpose:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.
4. **Applicability:**
 - 4.1. Transmission Operator
 - 4.2. Balancing Authority
 - 4.3. Generator Owner
 - 4.4. Generator Operator
 - 4.5. Transmission Owner
 - 4.6. Distribution Provider
5. **Effective Date:** See Implementation Plan.

B. Requirements and Measures

- R1. Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
 - 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data as deemed necessary by the Transmission Operator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. Each Transmission Operator shall make available its dated, current, in force documented specification for data.
- R2. Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*

- 2.1. A list of data and information needed by the Balancing Authority to support its analysis functions and Real-time monitoring.
 - 2.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 2.3. A periodicity for providing data.
 - 2.4. The deadline by which the respondent is to provide the indicated data.
- M2. Each Balancing Authority shall make available its dated, current, in force documented specification for data.
- R3. Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessment. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M3. Each Transmission Operator shall make available evidence that it has distributed its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R4. Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M4. Each Balancing Authority shall make available evidence that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, or e-mail records.
- R5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations]*
 - 5.1. A mutually agreeable format
 - 5.2. A mutually agreeable process for resolving data conflicts
 - 5.3. A mutually agreeable security protocol
- M5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall make available evidence that it has satisfied the obligations of the documented specifications. Such evidence could include, but is not

limited to, electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Process

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each responsible entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

Each Transmission Operator shall retain its dated, current, in force, documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R1 and Measurement M1 as well as any documents in force since the last compliance audit.

Each Balancing Authority shall retain its dated, current, in force, documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring in accordance with Requirement R2 and Measurement M2 as well as any documents in force since the last compliance audit.

Each Transmission Operator shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R3 and Measurement M3.

Each Balancing Authority shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring in accordance with Requirement R4 and Measurement M4.

Each Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R5 and Measurement M5.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Operations Planning | Low | The Transmission Operator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include four of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Transmission Operator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|--|---------------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R2 | Operations Planning | Low | The Balancing Authority did not include one of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include two of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include three of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include four of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. OR, The Balancing Authority did not have a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. |
| <p>For the Requirement R3 and R4 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R3 | Operations Planning | Low | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to four or more entities, or more than 15% of the entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |
| R4 | Operations Planning | Low | The Balancing Authority did not distribute its data specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to two entities, or more than 5% and less than or equal to 10% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to three entities, or more than 10% and less than or equal to 15% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to four or more entities, or more than 15% of the entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--|--------|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R5 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet one of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet two of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet three of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | August 8, 2005 | Removed "Proposed" from Effective Date | Errata |
| 1 | | Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) | Revised |
| 1 | October 17, 2008 | Adopted by NERC Board of Trustees | |
| 1 | March 17, 2011 | Order issued by FERC approving TOP-003-1 (approval effective 5/23/11) | |
| 2 | May 6, 2012 | Revised under Project 2007-03 | Revised |
| 2 | May 9, 2012 | Adopted by Board of Trustees | Revised |
| 3 | April 2014 | Changes pursuant to Project 2014-03 | Revised |
| 3 | November 13, 2014 | Adopted by Board of Trustees | Revisions under Project 2014-03 |
| 3 | November 19, 2015 | FERC approved TOP-003-3. Docket No. RM15-16-000, Order No. 817 | |
| 4 | February 6, 2020 | Adopted by NERC Board of Trustees | Revisions under Project 2017-07 |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

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Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for R1:

Changes to proposed Requirement R1, Part 1.1 are in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Transmission Operator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2 is in response to NOPR paragraph 78 on relay data. The language has been moved from approved PRC-001-1.

Corresponding changes have been made to Requirement R2 for the Balancing Authority and to proposed IRO-010-2, Requirement R1 for the Reliability Coordinator.

Rationale for R5:

Proposed Requirement R5, Part 5.3 is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Exhibit A-7

Proposed Reliability Standard TOP-003-4
Redline to Last Approved (TOP-003-3)

A. Introduction

1. **Title:** Operational Reliability Data
2. **Number:** TOP-003-~~43~~
3. **Purpose:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.
4. **Applicability:**
 - 4.1. Transmission Operator
 - 4.2. Balancing Authority
 - 4.3. Generator Owner
 - 4.4. Generator Operator
 - ~~4.5. Load-Serving Entity~~
 - 4.6-4.5. Transmission Owner
 - 4.7-4.6. Distribution Provider
5. **Effective Date:** See Implementation Plan.
- ~~6. **Background:**~~

~~See Project 2014-03 [project page](#).~~

B. Requirements and Measures

- R1. Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
 - 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data as deemed necessary by the Transmission Operator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. Each Transmission Operator shall make available its dated, current, in force documented specification for data.

- R2.** Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- 2.1.** A list of data and information needed by the Balancing Authority to support its analysis functions and Real-time monitoring.
 - 2.2.** Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 2.3.** A periodicity for providing data.
 - 2.4.** The deadline by which the respondent is to provide the indicated data.
- M2.** Each Balancing Authority shall make available its dated, current, in force documented specification for data.
- R3.** Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessment. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M3.** Each Transmission Operator shall make available evidence that it has distributed its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R4.** Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M4.** Each Balancing Authority shall make available evidence that it has distributed its data specification to entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, or e-mail records.
- R5.** Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations]*
- 5.1.** A mutually agreeable format
 - 5.2.** A mutually agreeable process for resolving data conflicts
 - 5.3.** A mutually agreeable security protocol

- M5.** Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall make available evidence that it has satisfied the obligations of the documented specifications. Such evidence could include, but is not limited to, electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Process

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each responsible entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

Each Transmission Operator shall retain its dated, current, in force, documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R1 and Measurement M1 as well as any documents in force since the last compliance audit.

Each Balancing Authority shall retain its dated, current, in force, documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring in accordance with Requirement R2 and Measurement M2 as well as any documents in force since the last compliance audit.

Each Transmission Operator shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the

Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R3 and Measurement M3.

Each Balancing Authority shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring in accordance with Requirement R4 and Measurement M4.

Each Balancing Authority, Generator Owner, Generator Operator, ~~Load Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R5 and Measurement M5.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Operations Planning | Low | The Transmission Operator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include four of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Transmission Operator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|--|---------------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R2 | Operations Planning | Low | The Balancing Authority did not include one of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include two of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include three of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include four of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. OR, The Balancing Authority did not have a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. |
| <p>For the Requirement R3 and R4 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R3 | Operations Planning | Low | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to four or more entities, or more than 15% of the entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |
| R4 | Operations Planning | Low | The Balancing Authority did not distribute its data specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to two entities, or more than 5% and less than or equal to 10% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to three entities, or more than 10% and less than or equal to 15% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to four or more entities, or more than 15% of the entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--|--------|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R5 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet one of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet two of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet three of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------------|--|--|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | August 8, 2005 | Removed "Proposed" from Effective Date | Errata |
| 1 | | Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) | Revised |
| 1 | October 17, 2008 | Adopted by NERC Board of Trustees | |
| 1 | March 17, 2011 | Order issued by FERC approving TOP-003-1 (approval effective 5/23/11) | |
| 2 | May 6, 2012 | Revised under Project 2007-03 | Revised |
| 2 | May 9, 2012 | Adopted by Board of Trustees | Revised |
| 3 | April 2014 | Changes pursuant to Project 2014-03 | Revised |
| 3 | November 13, 2014 | Adopted by Board of Trustees | Revisions under Project 2014-03 |
| 3 | November 19, 2015 | FERC approved TOP-003-3. Docket No. RM15-16-000, Order No. 817 | |
| <u>4</u> | <u>February 6, 2020</u> | <u>Adopted by NERC Board of Trustees</u> | <u>Revisions under Project 2017-07</u> |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

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Rationale for R5:

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Exhibit B

Implementation Plan

Implementation Plan

Project 2017-07 Standards Alignment with Registration

Applicable Standards

- FAC-002-3 – Facility Interconnection Studies
- IRO-010-3 – Reliability Coordinator Data Specification and Collection
- MOD-031-3 – Demand and Energy Data
- MOD-033-2 – Steady-State and Dynamic System Model Validation
- NUC-001-4 – Nuclear Plant Interface Coordination
- PRC-006-4 – Automatic Underfrequency Load Shedding
- TOP-003-4 – Operational Reliability Data

Requested Retirements

- FAC-002-2 – Facility Interconnection Studies
- IRO-010-2 – Reliability Coordinator Data Specification and Collection
- MOD-031-2 – Demand and Energy Data
- MOD-033-1 – Steady-State and Dynamic System Model Validation
- NUC-001-3 – Nuclear Plant Interface Coordination
- PRC-006-3 – Automatic Underfrequency Load Shedding
- TOP-003-3 – Operational Reliability Data

Applicable Entities

See subject standards.

Background

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system. FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria.

Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration formally addressed the remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the FAC, IRO, MOD, NUC, and TOP family of standards. References to Load-Serving Entity (LSEs) were removed or replaced by the appropriate NERC Registered Entity. PRC-006 was updated to include the more-limited UFLS-only Distribution Provider (DP) to the Applicability Section. A majority of the edits simply removed deregistered functional entities and their applicable requirements/references.

Effective Date

Reliability Standards FAC-002-3, IRO-010-3, MOD-031-3, MOD-033-2, NUC-001-4, PRC-006-4, and TOP-003-4

Where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the effective date of the applicable governmental authority's order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standards FAC-002-2, IRO-010-2, MOD-031-2, MOD-033-1, NUC-001-3, PRC-006-3, and TOP-003-3

The Reliability Standard shall be retired immediately prior to the effective date of the revised standard in the particular jurisdiction in which the revised standard is becoming effective.

Exhibit C

Order No. 672 Criteria

Exhibit C — Order No. 672 Criteria

Order No. 672 Criteria

In Order No. 672,¹ the Commission identified a number of criteria it will use to analyze Reliability Standards proposed for approval to ensure they are just, reasonable, not unduly discriminatory or preferential, and in the public interest. The discussion below identifies these factors and explains how the proposed Reliability Standards have met or exceeded the criteria.

1. Proposed Reliability Standards must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve that goal.²

The proposed Reliability Standards revise the currently effective versions to align the standards with registration changes approved by the Commission in 2015. In the proposed Reliability Standards, references to entities that are no longer registered by NERC are removed. Proposed Reliability Standard PRC-006-3 adds the Underfrequency Load Shedding (“UFLS”)-Only Distribution Provider as an applicable entity. In addition, revisions are proposed to ensure consistent use of the term Planning Coordinator across the body of NERC Reliability Standards. No substantive revisions are made to the underlying requirements.

¹ *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, 114 FERC ¶ 61,104, *order on reh’g*, Order No. 672-A, 114 FERC ¶ 61,328 (2006) [hereinafter Order No. 672].

² *See* Order No. 672, *supra* note 1, at P 321 (“The proposed Reliability Standard must address a reliability concern that falls within the requirements of section 215 of the FPA. That is, it must provide for the reliable operation of Bulk-Power System facilities. It may not extend beyond reliable operation of such facilities or apply to other facilities. Such facilities include all those necessary for operating an interconnected electric energy transmission network, or any portion of that network, including control systems. The proposed Reliability Standard may apply to any design of planned additions or modifications of such facilities that is necessary to provide for reliable operation. It may also apply to Cybersecurity protection.”).

See Order No. 672, *supra* note 1, at P 324 (“The proposed Reliability Standard must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve this goal. Although any person may propose a topic for a Reliability Standard to the ERO, in the ERO’s process, the specific proposed Reliability Standard should be developed initially by persons within the electric power industry and community with a high level of technical expertise and be based on sound technical and engineering criteria. It should be based on actual data and lessons learned from past operating incidents, where appropriate. The process for ERO approval of a proposed Reliability Standard should be fair and open to all interested persons.”).

2. Proposed Reliability Standards must be applicable only to users, owners, and operators of the bulk power system, and must be clear and unambiguous as to what is required and who is required to comply.³

The proposed Reliability Standards are clear and unambiguous as to what is required and who is required to comply, in accordance with Order No. 672. The revisions reflected in the proposed standards would promote alignment and consistency across NERC Reliability Standards and the NERC registration criteria and would reduce the potential for confusion regarding which entities are responsible for compliance with the standards.

3. A proposed Reliability Standard must include clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.⁴

The Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) for the proposed Reliability Standards are substantively unchanged from currently effective versions of the Reliability Standards, reflecting only those revisions necessary to effectuate the proposed alignment revisions. They continue to comport with NERC and Commission guidelines related to their assignment. The assignment of the severity level for each VSL is consistent with the corresponding requirement and the VSLs should ensure uniformity and consistency in the determination of penalties. The VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations. For these reasons, the proposed Reliability Standards include clear and understandable consequences in accordance with Order No. 672.

³ See Order No. 672, *supra* note 1, at P 322 (“The proposed Reliability Standard may impose a requirement on any user, owner, or operator of such facilities, but not on others.”).

See Order No. 672, *supra* note 1, at P 325 (“The proposed Reliability Standard should be clear and unambiguous regarding what is required and who is required to comply. Users, owners, and operators of the Bulk-Power System must know what they are required to do to maintain reliability.”).

⁴ See Order No. 672, *supra* note 1, at P 326 (“The possible consequences, including range of possible penalties, for violating a proposed Reliability Standard should be clear and understandable by those who must comply.”).

4. **A proposed Reliability Standard must identify clear and objective criteria or measures for compliance, so that it can be enforced in a consistent and non-preferential manner.⁵**

The proposed Reliability Standards contain measures that support each requirement by clearly identifying what is required and how the requirement will be enforced. These measures help provide clarity regarding how the requirements will be enforced and help ensure that the requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party. The measures are substantively unchanged from currently enforceable versions of the Reliability Standards, reflecting only those revisions necessary to effectuate the proposed alignment revisions.

5. **Proposed Reliability Standards should achieve a reliability goal effectively and efficiently, but do not necessarily have to reflect “best practices” without regard to implementation cost or historical regional infrastructure design.⁶**

The proposed Reliability Standards achieve their reliability goals effectively and efficiently in accordance with Order No. 672. The proposed Reliability Standards clarify which entities remain applicable to each standard following the registration changes previously approved by the Commission in 2015. NERC does not propose any substantive revisions to the underlying standard requirements.

6. **Proposed Reliability Standards cannot be “lowest common denominator,” i.e., cannot reflect a compromise that does not adequately protect Bulk-Power System reliability. Proposed Reliability Standards can consider costs to implement for smaller entities, but not at consequences of less than excellence in operating system reliability.⁷**

⁵ See Order No. 672, *supra* note 1, at P 327 (“There should be a clear criterion or measure of whether an entity is in compliance with a proposed Reliability Standard. It should contain or be accompanied by an objective measure of compliance so that it can be enforced and so that enforcement can be applied in a consistent and non-preferential manner.”).

⁶ See Order No. 672, *supra* note 1, at P 328 (“The proposed Reliability Standard does not necessarily have to reflect the optimal method, or ‘best practice,’ for achieving its reliability goal without regard to implementation cost or historical regional infrastructure design. It should however achieve its reliability goal effectively and efficiently.”).

⁷ See Order No. 672, *supra* note 1, at P 329 (“The proposed Reliability Standard must not simply reflect a compromise in the ERO’s Reliability Standard development process based on the least effective North American practice—the so-called ‘lowest common denominator’—if such practice does not adequately protect Bulk-Power

The proposed Reliability Standards do not reflect a “lowest common denominator” approach. The proposed Reliability Standards clarify which entities must comply with the standards following registration changes previously approved by the Commission in 2015. NERC does not propose any substantive revisions to the underlying standard requirements.

7. **Proposed Reliability Standards must be designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one geographic area or regional model. It should take into account regional variations in the organization and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.**⁸

The proposed Reliability Standards continue to apply consistently throughout North America and do not favor one geographic area or regional model. The proposed Reliability Standards clarify which entities must comply with the standards following registration changes previously approved by the Commission in 2015. NERC does not propose any substantive revisions to the underlying standard requirements.

System reliability. Although the Commission will give due weight to the technical expertise of the ERO, we will not hesitate to remand a proposed Reliability Standard if we are convinced it is not adequate to protect reliability.”).

See Order No. 672, *supra* note 1, at P 330 (“A proposed Reliability Standard may take into account the size of the entity that must comply with the Reliability Standard and the cost to those entities of implementing the proposed Reliability Standard. However, the ERO should not propose a ‘lowest common denominator’ Reliability Standard that would achieve less than excellence in operating system reliability solely to protect against reasonable expenses for supporting this vital national infrastructure. For example, a small owner or operator of the Bulk-Power System must bear the cost of complying with each Reliability Standard that applies to it.”).

⁸ *See* Order No. 672, *supra* note 1, at P 331 (“A proposed Reliability Standard should be designed to apply throughout the interconnected North American Bulk-Power System, to the maximum extent this is achievable with a single Reliability Standard. The proposed Reliability Standard should not be based on a single geographic or regional model but should take into account geographic variations in grid characteristics, terrain, weather, and other such factors; it should also take into account regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.”).

8. Proposed Reliability Standards should cause no undue negative effect on competition or restriction of the grid beyond any restriction necessary for reliability.⁹

The proposed Reliability Standards have no undue negative effect on competition and do not unreasonably restrict the available transmission capacity or limit the use of the BPS in a preferential manner. The proposed standards continue to require the same performance by each of the applicable entities, which have been aligned to reflect registration changes previously approved by the Commission in 2015.

9. The implementation time for the proposed Reliability Standard is reasonable.¹⁰

The proposed effective date for the proposed Reliability Standards is just and reasonable and appropriately balances the urgency in the need to implement the standards against the reasonableness of the time allowed for those who must comply to develop necessary procedures, software, facilities, staffing, or other relevant capability. The proposed implementation plan provides that the proposed Reliability Standards would become effective on the first day of the first calendar quarter that is three months after applicable regulatory approval. The currently effective versions of the standards would be retired immediately prior to the effective date of the revised Reliability Standards. This implementation timeline reflects consideration that entities may need time to update their internal systems and documentation to reflect the new Reliability

⁹ See Order No. 672, *supra* note 1, at P 332 (“As directed by section 215 of the FPA, FERC itself will give special attention to the effect of a proposed Reliability Standard on competition. The ERO should attempt to develop a proposed Reliability Standard that has no undue negative effect on competition. Among other possible considerations, a proposed Reliability Standard should not unreasonably restrict available transmission capability on the Bulk-Power System beyond any restriction necessary for reliability and should not limit use of the Bulk-Power System in an unduly preferential manner. It should not create an undue advantage for one competitor over another.”).

¹⁰ See Order No. 672, *supra* note 1, at P 333 (“In considering whether a proposed Reliability Standard is just and reasonable, the Commission will consider also the timetable for implementation of the new requirements, including how the proposal balances any urgency in the need to implement it against the reasonableness of the time allowed for those who must comply to develop the necessary procedures, software, facilities, staffing or other relevant capability.”).

Standard version numbers. The proposed implementation plan is attached as **Exhibit B** to this petition.

10. The Reliability Standard was developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process.¹¹

The proposed Reliability Standards were developed in accordance with NERC's Commission-approved, ANSI-accredited processes for developing and approving Reliability Standards. **Exhibit E** includes a summary of the Reliability Standard development proceedings, and details the processes followed to develop the proposed Reliability Standards. These processes included, among other things, comment periods, pre-ballot review periods, and balloting periods. Additionally, all meetings of the standard drafting team were properly noticed and open to the public.

11. NERC must explain any balancing of vital public interests in the development of proposed Reliability Standards.¹²

NERC has identified no competing public interests regarding the request for approval of this proposed Reliability Standards. No comments were received that indicated that one or more of the proposed Reliability Standards conflicts with other vital public interests.

¹¹ See Order No. 672, *supra* note 1, at P 334 (“Further, in considering whether a proposed Reliability Standard meets the legal standard of review, we will entertain comments about whether the ERO implemented its Commission-approved Reliability Standard development process for the development of the particular proposed Reliability Standard in a proper manner, especially whether the process was open and fair. However, we caution that we will not be sympathetic to arguments by interested parties that choose, for whatever reason, not to participate in the ERO’s Reliability Standard development process if it is conducted in good faith in accordance with the procedures approved by the Commission.”).

¹² See Order No. 672, *supra* note 1, at P 335 (“Finally, we understand that at times development of a proposed Reliability Standard may require that a particular reliability goal must be balanced against other vital public interests, such as environmental, social and other goals. We expect the ERO to explain any such balancing in its application for approval of a proposed Reliability Standard.”).

12. Proposed Reliability Standards must consider any other appropriate factors.¹³

No other negative factors relevant to whether the proposed Reliability Standards are just and reasonable were identified.

¹³ See Order No. 672, *supra* note 1, at P 323 (“In considering whether a proposed Reliability Standard is just and reasonable, we will consider the following general factors, as well as other factors that are appropriate for the particular Reliability Standard proposed.”).

Exhibit D

Analysis of Violation Risk Factors and Violation Severity Levels

Exhibit D-1

Analysis of Violation Risk Factors and Violation Severity Levels
Proposed Reliability Standard FAC-002-3

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, FAC-002-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for FAC-002-3, Requirement R1

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R1

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R2

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R2

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R3

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R3

This justification is provided on the following page.

VRF Justification for FAC-002-3, Requirement R4

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R4

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R5

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R5

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSLs for FAC-002-3, Requirement R3

| Lower | Moderate | High | Severe |
|--|--|---|--|
| <p>The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator.</p> |

Exhibit D-2

Analysis of Violation Risk Factors and Violation Severity Levels
Proposed Reliability Standard IRO-010-3

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, IRO-010-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for IRO-010-3, Requirement R1

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R1

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R2

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R2

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R3

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R3

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

Exhibit D-3

Analysis of Violation Risk Factors and Violation Severity Levels
Proposed Reliability Standard MOD-031-3

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-031-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-031-3, Requirement R1

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R1

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R2

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R2

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R4

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R4

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

Exhibit D-4

Analysis of Violation Risk Factors and Violation Severity Levels
Proposed Reliability Standard MOD-033-2

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-033-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-033-2, Requirement R1

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for F MOD-033-2, Requirement R1

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VRF Justification for MOD-033-2, Requirement R2

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for MOD-033-2, Requirement R2

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

Exhibit D-5

Analysis of Violation Risk Factors and Violation Severity Levels
Proposed Reliability Standard NUC-001-4

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, NUC-001-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for NUC-001-4, Requirement R1

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R1

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R2

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R2

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R3

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R3

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R4

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R4

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R5

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R5

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R6

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R6

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R7

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R7

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R8

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R8

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R9

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R9

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

Exhibit D-6

Analysis of Violation Risk Factors and Violation Severity Levels
Proposed Reliability Standard PRC-006-4

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, PRC-006-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for PRC-006-4, Requirement R1

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R1

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R2

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R2

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R3

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R3

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R4

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R4

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R5

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R5

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R6

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R6

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R7

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R7

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R8

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R8

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R9

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R9

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R10

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R10

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R11

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R11

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R12

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R12

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R13

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R13

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R14

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R14

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R15

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R15

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

Exhibit D-7

Analysis of Violation Risk Factors and Violation Severity Levels
Proposed Reliability Standard TOP-003-4

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, TOP-003-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

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- Protection systems and their coordination
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- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for TOP-003-4, Requirement R1

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R1

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R2

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R2

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R3

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R3

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R4

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R4

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R5

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R5

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

Exhibit E

Summary of Development and Complete Record of Development

Summary of Development History

The following is a summary of the development record for the proposed Reliability Standards developed under Project 2017-07 Standards Alignment with Registration.

I. Overview of the Standard Drafting Team

When evaluating a proposed Reliability Standard, the Commission is expected to give “due weight” to the technical expertise of the ERO.¹ The technical expertise of the ERO is derived from the standard drafting team (“SDT”) selected to lead each project in accordance with Section 4.3 of the NERC Standard Processes Manual, Appendix 3A to the NERC Rules of Procedure.² For this project, the SDT consisted of industry experts, all with a diverse set of experiences. A roster of the Project 2017-07 Standards Alignment with Registration SDT members is included in **Exhibit F**.

II. Standard Development History

A. Standard Authorization Request Development

On July 19, 2017, the Standards Committee authorized: (i) posting the general Standards Alignment with Registration Standard Authorization Request (“SAR”) for a 30-day formal comment period; (ii) posting a SAR to revise MOD-032-1 for a 30-day formal comment period; and (iii) soliciting nominations for a SAR drafting team to consider both SARs and develop a combined SAR.³ The SARs were posted for comment from August 1, 2017 through August 30, 2017 and the SAR drafting team nominations were open from August 1, 2017 through August 14, 2017. The Standards Alignment with Registration SAR received 19 sets of responses, including

¹ Section 215(d)(2) of the Federal Power Act; 16 U.S.C. § 824(d)(2) (2018).

² The NERC *Standard Processes Manual* is available at https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/SPM_Clean_Mar2019.pdf.

³ NERC, *Agenda — Standards Committee Meeting*, Agenda Item 11 (Project 2017-07 Standards Alignment with Registration), https://www.nerc.com/comm/SC/Agenda%20Highlights%20and%20Minutes/SC%20Agenda%20Package_July192017.pdf.

comments from approximately 64 different people from approximately 52 companies, representing 10 of the Industry segments.⁴ The MOD-032-1 SAR received 18 sets of responses, including comments from approximately 63 different people from approximately 51 companies, representing all 10 industry segments.⁵

The Standards Committee appointed the SAR SDT on October 18, 2017.⁶ The SDT combined the initial two SARs into a single project and posted a revised SAR from December 11, 2017 through January 9, 2018. There were 16 sets of responses, including comments from approximately 67 different people from approximately 51 companies, representing all 10 of the Industry Segments.⁷ Based on those comments, the SDT posted a final SAR including clarifications in project scope and considering synergies with other ongoing standards projects. The final SAR was posted for a 30-day formal comment period from February 1, 2018 through March 2, 2018. There were 18 sets of responses, including comments from approximately 76 different people from approximately 62 companies, representing all 10 of the Industry Segments.⁸

⁴ NERC, *Consideration of Comments — 2017-07 Standards Alignment with Registration SAR*, https://www.nerc.com/pa/Stand/Project201707StandardsAlignmentwithRegistration/2017_07_Consideration_of_Comments_1211017.pdf.

⁵ NERC, *Consideration of Comments — 2017-07 Standards Alignment with Registration SAR — MOD-032-1*, https://www.nerc.com/pa/Stand/Project201707StandardsAlignmentwithRegistration/2017-07_RAW_MOD032_SAR_083117.pdf.

⁶ NERC, *Minutes — Standards Committee Conference Call*, Agenda Item 8 (Project 2017-07 Standards Alignment with Registration), October 18, 2017, https://www.nerc.com/comm/SC/Agenda%20Highlights%20and%20Minutes/Standards%20Committee%20Meeting%20Minutes%20-%20Approved_October_18_2017.pdf.

⁷ NERC, *Consideration of Comments — 2017-07 Standards Alignment with Registration — Standards Authorization Request*, https://www.nerc.com/pa/Stand/Project201707StandardsAlignmentwithRegistration/2017-07_Consideration_of_Comments_SAR2Feb2018.pdf.

⁸ NERC, *Consideration of Comments — 2017-07 Standards Alignment with Registration — Standards Authorization Request*, https://www.nerc.com/pa/Stand/Project201707StandardsAlignmentwithRegistration/Project%20%202017-07_Consideration_of_Comments_030518.pdf.

The Standards Committee accepted the final SAR on April 18, 2018, authorized the proposed Reliability Standards revisions, and authorized posting for nominations to the Project 2017-07 SDT.⁹ The nominations were open from May 1, 2018 through May 14, 2018.

B. First Posting – Formal Comment Period and Initial Ballot

An initial draft of the seven proposed Reliability Standards (FAC-002-3, IRO-010-3, MOD-031-3, MOD-033-2, NUC-001-4, PRC-006-4, and TOP-003-4), the implementation plan, and the supporting materials were posted for a 45-day formal comment period from October 29, 2019 through December 12, 2019. There were 32 sets of responses, including comments from approximately 75 different people from approximately 61 companies, representing 10 of the Industry Segments.¹⁰ An initial ballot was open for the final ten days of the comment period from December 3, 2019 through December 12, 2019. The table below summarizes the results of the initial ballot and nonbinding poll.¹¹

| | Ballot | Non-binding Poll |
|-----------|--------------------------|-------------------------------------|
| | Quorum / Approval | Quorum / Supportive Opinions |
| FAC-002-3 | 88.76% / 99.69% | 86.99% / 99.44% |
| IRO-010-3 | 89.02% / 99.36% | 87.6% / 99.43% |
| MOD-031-3 | 89.02% / 99.69% | 87.19% / 99.43% |
| MOD-033-2 | 88.98% / 99.69% | 86.78% / 99.43% |
| NUC-001-4 | 89.96% / 99.59% | 87.67% / 99.31% |

⁹ NERC, *Minutes — Standards Committee Conference Call*, Agenda Item 5 (Project 2017-07 Standards Alignment with Registration), April 18, 2018, <https://www.nerc.com/comm/SC/Agenda%20Highlights%20and%20Minutes/Standards%20Committee%20Meeting%20Minutes%20-%20Approved%20June%2013,%202018.pdf>.

¹⁰ NERC, *Consideration of Comments*, https://www.nerc.com/pa/Stand/Project201707StandardsAlignmentwithRegistration/2017-07%20Consideration%20of%20Comments_January2020.pdf.

¹¹ The results are posted on the project page at <https://www.nerc.com/pa/Stand/Pages/Project201707StandardsAlignmentwithRegistration.aspx>.

| | Ballot | Non-binding Poll |
|---------------------|--------------------------|-------------------------------------|
| | Quorum / Approval | Quorum / Supportive Opinions |
| PRC-006-4 | 89.06% / 99.38% | 86.36% / 98.84% |
| TOP-003-4 | 88.72% / 99.69% | 86.48% / 99.43% |
| Implementation Plan | 87.89% / 99.68% | |

C. Final Ballot

The proposed Reliability Standards were posted for a 10-day final ballot period from January 14, 2020 through January 23, 2020. The results are summarized in the table below.¹²

| Name | Quorum / Approval |
|---------------------|--------------------------|
| FAC-002-3 | 89.53% / 99.69% |
| IRO-010-3 | 89.8% / 99.69% |
| MOD-031-3 | 89.8% / 99.69% |
| MOD-033-2 | 89.76% / 99.69% |
| NUC-001-4 | 90.83% / 99.6% |
| PRC-006-4 | 89.84% / 99.38% |
| TOP-003-4 | 89.88% / 99.69% |
| Implementation Plan | 88.67% / 99.69% |

¹² The results are posted on the project page at <https://www.nerc.com/pa/Stand/Pages/Project201707StandardsAlignmentwithRegistration.aspx>.

D. Board of Trustees Adoption

On February 6, 2020, the NERC Board of Trustees adopted proposed Reliability Standards FAC-002-3, IRO-010-3, MOD-031-3, MOD-033-2, NUC-001-4, PRC-006-4, and TOP-003-4, and approved the implementation plan and the associated VRFs and VSLs¹³

¹³ NERC, *Agenda — Board of Trustees*, Agenda Item 7a, February 6, 2020, https://www.nerc.com/gov/bot/Agenda%20highlights%20and%20Minutes%202013/Board_Open_Meeting_Agenda_Package_February_6_2020.pdf.

Complete Record of Development

Project 2017-07 Standards Alignment with Registration

Related Files

Status
Final ballots for **Project 2017-07 Standards Alignment with Registration** concluded at **8 p.m. Eastern, Thursday, January 23, 2020** for the following Standards and Implementation Plan:

- FAC-002-3 – Facility Interconnection Studies
- IRO-010-3 – Reliability Coordinator Data Specification and Collection
- MOD-031-3 – Demand and Energy Data
- MOD-033-2 – Steady-State and Dynamic System Model Validation
- NUC-001-4 – Nuclear Plant Interface Coordination
- PRC-006-4 – Automatic Underfrequency Load Shedding
- TOP-003-4 – Operational Reliability Data Implementation Plan

Background

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) Initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system.

FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria.

Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Standard(s) Affected: BAL, CIP, IRO and TOP Family of Standards, MOD-032-1 – Data for Power System Modeling and Analysis, PRC-005-1.1b – Transmission and Generation Protection System Maintenance and Testing, INT-004-3.1 – Dynamic Transfers, NUC-001-3 – Nuclear Plant Interface Coordination

Update: The following Reliability Standards were reviewed but are not being proposed for modification at this time due to the following reasons:

- BAL-005-0.2b has been superseded by BAL-005-1 on January 1, 2019, which deleted the Load-Serving Entity function).
- CIP-002-5.1a, CIP-003-6, CIP-003-7, CIP-004-6, CIP-005-5, CIP-005-6, CIP-006-6, CIP-007-6, CIP-008-5, CIP-009-6, CIP-010-2, and CIP-011-2 will not be revised at this time due to the current Project 2016-02 (Modifications to CIP Standards) and the CIP Standards Efficiency Review.
- FAC-010-3, FAC-011-3, and FAC-014-2 are being addressed in Project 2015-09.
- INT-004-3.1 and INT-006-4 are recommended for retirement by Standard Efficiency Review Phase 1.
- MOD-001-2, MOD-004-1, MOD-020-0 are recommended for retirement by Standard Efficiency Review Phase 1.
- MOD-032-1 will not be revised at this time, but may come back into Project 2017-07. The work of the System Planning Impact from Distributed Energy Resource Working Group (SPIDERWG) is ongoing at the time of the final posting for Project 2017-07. In June 2018, the NERC Planning Committee (PC) formed the SPIDERWG subcommittee to address Distributed Energy Resource (DER) impacts on the bulk power system (BPS). Currently, the subcommittee has proposed a Standard Authorization Request (SAR) for MOD-032-1 pertaining to DERs. The SAR has recently been reviewed by the PC. At this time, the Project 2017-07 drafting team will not take any action in reference to the MOD-032 standard until the SPIDERWG has completed their initial efforts.
- PRC-005-6 will not be revised at this time due to the current Project 2019-04 (Modifications to PRC-005-6).

Purpose/Industry Need

Project 2017-7 Standards Alignment with Registration will formally address any remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be removed or replaced by the appropriate NERC Registered Entity. The project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section of PRC-005 and PRC-006 per NERC registration criteria. This alignment includes three categories:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. Additionally PRC-005 and PRC-006 will be updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to the Applicability Sections.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004-3.1 and NUC-001-3 standards. Rather than the Project 2017-07 making the revisions the SDT could coordinate with the periodic review teams currently reviewing INT-004-3.1 and NUC-001-3 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

| Draft | Actions | Dates | Results | Consideration of Comments |
|--|---------|-------|--|---------------------------|
| <p>Final</p> <p>FAC-002-3</p> <p>(65) Clean (66) Redline (67) Redline to last approved</p> <p>IRO-010-3</p> <p>(68) Clean (69) Redline (70) Redline to last approved</p> <p>MOD-031-3</p> <p>(71) Clean (72) Redline (73) Redline to last approved</p> | | | <p>Ballot Results</p> <p>(103) FAC-002-3</p> <p>(104) IRO-010-3</p> <p>(105) MOD-031-3</p> <p>(106) MOD-033-2</p> <p>(107) NUC-001-4</p> | |

| | | | | |
|--|--|----------------------------|---|--|
| <p>MOD-033-2 (74) Clean (75) Redline (76) Redline to last approved</p> <p>NUC-001-4 (77) Clean (78) Redline (79) Redline to last approved</p> <p>PRC-006-4 (80) Clean (81) Redline (82) Redline to last approved</p> <p>TOP-003-4 (83) Clean (84) Redline (85) Redline to last approved</p> <p>Implementation Plan (86) Clean (87) Redline</p> <p>Supporting Materials</p> <p>FAC-002-3 VRF/VSL Justification (88) Clean (89) Redline</p> <p>IRO-010-3 VRF/VSL Justification (90) Clean (91) Redline</p> <p>MOD-031-3 VRF/VSL Justification (92) Clean (93) Redline</p> <p>MOD-033-2 VRF/VSL Justification (94) Clean (95) Redline</p> <p>NUC-001-4 VRF/VSL Justification (96) Clean (97) Redline</p> <p>PRC-006-4 VRF/VSL Justification (98) Clean (99) Redline</p> <p>TOP-003-4 VRF/VSL Justification (100) Clean (101) Redline</p> | <p>Final Ballot</p> <p>(102) Info</p> <p>Vote</p> | <p>01/14/20 - 01/23/20</p> | <p>(108) PRC-006-4</p> <p>(109) TOP-003-4</p> <p>(110) Implementation Plan</p> | |
| <p>Draft 1</p> <p>FAC-002-3 (23) Clean (24) Redline</p> <p>IRO-010-3 (25) Clean (26) Redline</p> <p>MOD-031-3 (27) Clean (28) Redline</p> <p>MOD-033-2 (29) Clean (30) Redline</p> <p>NUC-001-4 (31) Clean (32) Redline</p> <p>PRC-006-4 (33) Clean (34) Redline</p> <p>TOP-003-4 (35) Clean (36) Redline</p> <p>(37) Implementation Plan</p> | <p>Initial Ballot</p> <p>(49) Info</p> <p>Vote</p> | <p>12/03/19 - 12/12/19</p> | <p>Ballot Results</p> <p>(50) FAC-002-3</p> <p>(51) IRO-010-3</p> <p>(52) MOD-031-3</p> <p>(53) MOD-033-2</p> <p>(54) NUC-001-4</p> <p>(55) PRC-006-4</p> <p>(56) TOP-003-4</p> <p>(57) Implementation Plan</p> <p>Non-binding Poll Results</p> <p>(58) FAC-002-3</p> | |

| | | | | |
|--|---|----------------------------|---|--|
| <p align="center">Supporting Materials</p> <p>(38) Unofficial Comment Form (Word)</p> <p>(39) FAC-002-3 VRF/VSL Justification</p> <p>(40) IRO-010-3 VRF/VSL Justification</p> <p>(41) MOD-031-3 VRF/VSL Justification</p> <p>(42) MOD-033-2 VRF/VSL Justification</p> <p>(43) NUC-001-4 VRF/VSL Justification</p> <p>(44) PRC-006-4 VRF/VSL Justification</p> <p>(45) TOP-003-4 VRF/VSL Justification</p> | | | <p>(59) IRO-010-3</p> <p>(60) MOD-031-3</p> <p>(61) MOD-033-2</p> <p>(62) NUC-001-4</p> <p>(63) PRC-006-4</p> <p>(64) TOP-003-4</p> | |
| | <p>Comment Period</p> <p>(46) Info</p> <p>Submit Comments</p> | <p>10/29/19 - 12/12/19</p> | <p>(47) Comments Received</p> | <p>(48) Consideration of Comments</p> |
| | <p>Join Ballot Pools</p> | <p>10/29/19 - 11/27/19</p> | | |
| | <p>Send RSAW feedback to: RSAWfeedback@nerc.net</p> | | | |
| <p align="center">Drafting Team Nominations</p> <p align="center">Supporting Materials</p> <p>(21) Unofficial Nomination Form (Word)</p> | <p>Nomination Period</p> <p>(22) Info</p> <p>Submit Nominations</p> | <p>05/01/18 – 05/14/18</p> | | |
| <p>Standards Authorization Request</p> <p>(17) Clean (18) Redline</p> <p align="center">Supporting Materials</p> <p>(19) Unofficial Comment Form (Word)</p> | <p>Comment Period</p> <p>(20a) Info</p> <p>Submit Comments</p> | <p>02/01/18 – 03/02/18</p> | <p>(20b) Comments Received</p> | <p>(20c) Consideration of Comments</p> |
| <p>Additional SAR for Standards Alignment with Registration</p> <p>(12) Clean (13) Redline</p> <p align="center">Supporting Materials</p> <p>(14) Unofficial Comment Form (Word)</p> | <p>Comment Period</p> <p>(15) Info</p> <p>Submit Comments</p> | <p>12/11/17 – 01/09/18</p> | <p>(16a) Comments Received</p> | <p>(16b) Consideration of Comments</p> |
| <p>(7) SAR for Standards Alignment with Registration</p> <p align="center">Supporting Materials</p> <p>(8) Unofficial Comment Form (Word)</p> | <p>Comment Period</p> <p>(9) Info</p> <p>Submit Comments</p> | <p>08/01/17 – 08/30/17</p> | <p>(10) Comments Received</p> | <p>(11) Consideration of Comments</p> |

| | | | |
|--|--|----------------------------|----------------------------------|
| <p>(3) SAR for MOD-032-1</p> <p>Supporting Materials</p> <p>(4) Unofficial Comment Form (Word)</p> | <p>Comment Period</p> <p>(5) Info</p> <p>Submit Comments</p> | <p>08/01/17 – 08/30/17</p> | <p>(6) Comments Received</p> |
| <p>SAR Drafting Team Nominations</p> <p>Supporting Materials</p> <p>(1) Unofficial Nomination Form (Word)</p> | <p>Nomination Period</p> <p>(2) Info</p> <p>Submit Nominations</p> | <p>08/01/17 – 08/14/17</p> | |

Unofficial Nomination Form

Project 2017-07 Standards Alignment with Registration

SAR Drafting Team

Do not use this form for submitting nominations. Use the [electronic form](#) to submit nominations by **8 p.m. Eastern, Monday, August 14, 2017**. This unofficial version is provided to assist nominees in compiling the information necessary to submit the electronic form.

Additional information about this project is available on the [Project 2017-07 Standards Alignment with Registration](#) page. If you have questions, contact Standards Developer, [Laura Anderson](#) (via email), or at 404-446-9671.

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

Previous drafting or review team experience is beneficial, but not required. A brief description of the desired qualifications, expected commitment, and other pertinent information is included below.

Project 2017-07 Standards Alignment with Registration

The purpose of this project is focused on making the tailored Reliability Standards updates necessary to reflect the retirement of PSEs, IAs, and LSEs (as well as all of their applicable references). This alignment includes three categories:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. Additionally PRC-005 will be updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004 and NUC-001 standards. In other words, rather than making the revisions immediately, this information would be provided to the periodic review teams currently reviewing INT-004 and NUC-001 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Standards affected:

BAL, CIP, IRO and TOP Family of Standards, MOD-032-1 – Data for Power System Modeling and Analysis, PRC-005-1.1b – Transmission and Generation Protection System Maintenance and Testing, INT-004-3.1 – Dynamic Transfers, NUC-001-3 – Nuclear Plant Interface Coordination

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) Initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system.

FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria. Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

The time commitment for this project is expected to be up to two face-to-face meetings per quarter (on average two full working days each meeting) with conference calls scheduled as needed to meet the agreed-upon timeline the SAR drafting team sets forth. Team members may also have side projects, either individually or by subgroup, to present to the larger team for discussion and review. Lastly, an important component of the SAR drafting team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful project outcome.

| | | |
|--|---|--|
| Name: | | |
| Organization: | | |
| Address: | | |
| Telephone: | | |
| E-mail: | | |
| Please briefly describe your experience and qualifications to serve on the requested Standard Drafting Team (Bio): | | |
| <p>If you are currently a member of any NERC drafting team, please list each team here:</p> <input type="checkbox"/> Not currently on any active SAR or standard drafting team. <input type="checkbox"/> Currently a member of the following SAR or standard drafting team(s): | | |
| <p>If you previously worked on any NERC drafting team please identify the team(s):</p> <input type="checkbox"/> No prior NERC SAR or standard drafting team. <input type="checkbox"/> Prior experience on the following team(s): | | |
| <p>Select each NERC Region in which you have experience relevant to the Project for which you are volunteering:</p> | | |
| <input type="checkbox"/> Texas RE <input type="checkbox"/> FRCC <input type="checkbox"/> MRO | <input type="checkbox"/> NPCC <input type="checkbox"/> RF <input type="checkbox"/> SERC | <input type="checkbox"/> SPP RE <input type="checkbox"/> WECC <input type="checkbox"/> NA – Not Applicable |

| Select each Industry Segment that you represent: | |
|---|--|
| <input type="checkbox"/> | 1 — Transmission Owners |
| <input type="checkbox"/> | 2 — RTOs, ISOs |
| <input type="checkbox"/> | 3 — Load-serving Entities |
| <input type="checkbox"/> | 4 — Transmission-dependent Utilities |
| <input type="checkbox"/> | 5 — Electric Generators |
| <input type="checkbox"/> | 6 — Electricity Brokers, Aggregators, and Marketers |
| <input type="checkbox"/> | 7 — Large Electricity End Users |
| <input type="checkbox"/> | 8 — Small Electricity End Users |
| <input type="checkbox"/> | 9 — Federal, State, and Provincial Regulatory or other Government Entities |
| <input type="checkbox"/> | 10 — Regional Reliability Organizations and Regional Entities |
| <input type="checkbox"/> | NA — Not Applicable |
| Select each Function ¹ in which you have current or prior expertise: | |
| <input type="checkbox"/> Balancing Authority | <input type="checkbox"/> Transmission Operator |
| <input type="checkbox"/> Compliance Enforcement Authority | <input type="checkbox"/> Transmission Owner |
| <input type="checkbox"/> Distribution Provider | <input type="checkbox"/> Transmission Planner |
| <input type="checkbox"/> Generator Operator | <input type="checkbox"/> Transmission Service Provider |
| <input type="checkbox"/> Generator Owner | <input type="checkbox"/> Purchasing-selling Entity |
| <input type="checkbox"/> Interchange Authority | <input type="checkbox"/> Reliability Coordinator |
| <input type="checkbox"/> Load-serving Entity | <input type="checkbox"/> Reliability Assurer |
| <input type="checkbox"/> Market Operator | <input type="checkbox"/> Resource Planner |
| <input type="checkbox"/> Planning Coordinator | |

¹ These functions are defined in the NERC [Functional Model](#), which is available on the NERC web site.

Provide the names and contact information for two references who could attest to your technical qualifications and your ability to work well in a group:

| | | | |
|---------------|--|------------|--|
| Name: | | Telephone: | |
| Organization: | | E-mail: | |
| Name: | | Telephone: | |
| Organization: | | E-mail: | |

Provide the name and contact information of your immediate supervisor or a member of your management who can confirm your organization's willingness to support your active participation.

| | | | |
|--------|--|------------|--|
| Name: | | Telephone: | |
| Title: | | Email: | |

Standards Announcement

Project 2017-07 Standards Alignment with Registration

Nomination Period Open through August 14, 2017

[Now Available](#)

Nominations are being sought for Standards Authorization Request drafting team members through **8 p.m. Eastern, Monday, August 14, 2017.**

Use the [electronic form](#) to submit a nomination. If you experience any difficulties in using the electronic form, contact [Nasheema Santos](#). An unofficial Word version of the nomination form is posted on the [Drafting Team Vacancies](#) page and the project page.

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

The time commitment for this project is expected to be two face-to-face meetings per quarter (on average two full working days each meeting) with conference calls scheduled as needed to meet the agreed upon timeline the team sets forth. Team members may also have side projects, either individually or by sub-group, to present for discussion and review. Lastly, an important component of the team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful ballot.

Previous team experience is beneficial but not required. See the project page and nomination form for additional information.

Next Steps

The Standards Committee is expected to appoint members to the team in September 2017. Nominees will be notified shortly after they have been appointed.

For information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446- 9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower

Atlanta, GA 30326
404-446-2560 | www.nerc.com

Standard Authorization Request (SAR) Form

Complete and please email this form, with attachment(s) to: sarcomm@nerc.com

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|--|--|-------------------------------------|--|
| SAR Title: | MOD-032-1 Entity Change Due to Rules of Procedure Modification | | |
| Date Submitted: | 06/15/2017 | | |
| SAR Requester | | | |
| Name: | Rich Hydzik on behalf of NERC Essential Reliability Resources Work Group | | |
| Organization: | NERC ERSWG / Avista | | |
| Telephone: | 509 495 4005 | Email: | rich.hydzik@avistacorp.com |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> | New Standard | <input type="checkbox"/> | Imminent Action/ Confidential Issue (SPM Section 10) |
| <input checked="" type="checkbox"/> | Revision to Existing Standard | <input type="checkbox"/> | Variance development or revision |
| <input type="checkbox"/> | Add, Modify or Retire a Glossary Term | <input type="checkbox"/> | Other (Please specify) |
| <input type="checkbox"/> | Withdraw/retire an Existing Standard | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input type="checkbox"/> | Regulatory Initiation | <input type="checkbox"/> | NERC Standing Committee Identified |
| <input type="checkbox"/> | Emerging Risk (Reliability Issues Steering Committee) Identified | <input type="checkbox"/> | Enhanced Periodic Review Initiated |
| <input type="checkbox"/> | Reliability Standard Development Plan | <input checked="" type="checkbox"/> | Industry Stakeholder Identified |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| This project is intended to facilitate accurate data collection to facilitate modeling of the Distribution Provider's (DP) facilities. | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| Accurate modeling of distribution facilities is required to ensure that power system models accurately reflect the bulk power system (BPS) performance. These models are used in system analysis for planning purposes and construction of a reliable BPS. These models are in used in system analysis for operating purposes to ensure a reliable BPS in both short term, day-ahead, and real-time operational planning analyses. | | | |
| Project Scope (Define the parameters of the proposed project): | | | |
| This project proposes removing the Load Serving Entity (LSE) from the Applicability Section (4.1.3) and replacing LSE with Distribution Provider (DP) as the applicable entity for Section 4.1.3. LSE is no longer considered a reliability entity due to a change in the NERC Rules of Procedure. The DP is defined as "provides and operates the 'wires' between the transmission system and the end use customer." The DP is the applicable entity to provide data for power system modeling and analysis for distribution systems. Attachment 1 should be modified by replacing the applicable entity LSE with DP. | | | |

| Requested information | |
|--|-----------------------|
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g. research paper) to guide development of the Standard or definition): | |
| This project proposes removing the Load Serving Entity (LSE) from the Applicability Section (4.1.3) and replacing LSE with Distribution Provider (DP) as the applicable entity for Section 4.1.3. LSE is no longer considered a reliability entity due to a change in the NERC Rules of Procedure. The DP is defined as “provides and operates the ‘wires’ between the transmission system and the end use customer.” The DP is the applicable entity to provide data for power system modeling and analysis for distribution systems. | |
| Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project): | |
| Cost impacts should be minimal. Planning Coordinator and Transmission Planners are required to collect modeling data under MOD-032-1. In the past, Planning Coordinator and Transmission Planners collected from LSE’s. This entity would be the DP under the proposed change. | |
| Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g. Dispersed Generation Resources): | |
| None | |
| To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g. Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions): | |
| Planning Coordinator | Transmission Planner |
| Transmission Operator | Distribution Provider |
| Do you know of any consensus building activities ² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity. | |
| No | |
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so which standard(s) or project number(s)? | |
| No | |
| Are there alternatives (e.g. guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. | |
| None identified | |

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input checked="" type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Reliability Principles | |
|-------------------------------------|---|
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|--|----------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | yes |
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|--|-------------|
| Region(s)/ Interconnection | Explanation |
| <i>e.g.</i> NPCC | |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate) | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff <input type="checkbox"/> Draft SAR presented to SC for acceptance <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> Final SAR endorsed by the SC <input type="checkbox"/> SAR assigned a Standards Project by NERC <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-----------------|-----------------------------|------------------|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January X, 2017 | Standards Information Staff | Revised |

Unofficial Comment Form

Project 2017-07 Standards Alignment with Registration

MOD-032-1 Standards Authorization Request

Do not use this form for submitting comments. Use the [electronic form](#) to submit comments on **Project 2017-07 Standards Alignment with Registration**. The electronic form must be submitted by **8 p.m. Eastern, Wednesday, August 30, 2017**.

Additional information is available on the [Project 2017-07 Standards Alignment with Registration](#) page. If you have questions, contact Standards Developer, [Laura Anderson](#) (via email), or at 404-446-9671.

Background Information

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) Initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system.

FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria. Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration is focused on making the tailored Reliability Standards updates necessary to reflect the retirement of PSEs, IAs, and LSEs (as well as all of their applicable references). This alignment includes three categories:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. Additionally PRC-005 will be updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004 and NUC-001 standards. In other words, rather than making the revisions immediately, this information would be provided to the periodic review teams currently reviewing

INT-004 and NUC-001 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Questions

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR for MOD-032-1? If not, please explain why you do not agree and, if possible, **provide specific language revisions that would make it acceptable to you.**

Yes

No

Comments:

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Comments:

Standards Announcement

Project 2017-07 Standards Alignment with Registration and MOD-032-1 Standards Authorization Request

Formal Comment Periods Open through August 30, 2017

Now Available

Simultaneous 30-day formal comment periods on the Standard Authorization Request (SAR) for Standards Alignment with Registration and the SAR for **MOD-032-1 – Data for Power System Modeling and Analysis** are open through **8 p.m. Eastern, Wednesday, August 30, 2017**.

Commenting

Use the [electronic form](#) to submit comments on the SAR. If you experience any difficulties using the electronic form, contact [Nasheema Santos](#). The unofficial Word versions of the comment forms are posted on the [project page](#).

If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).

- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The drafting team will review all responses received during the comment period and determine the next steps of the project.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446- 9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE

Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Consideration of Comments

Project Name: 2017-07 Standards Alignment with Registration SAR | MOD-032-1

Comment Period Start Date: 8/1/2017

Comment Period End Date: 8/30/2017

Associated Ballots:

There were 18 sets of responses, including comments from approximately 63 different people from approximately 51 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR for MOD-032-1? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|----------------------|-----------------|----------------------|---------------------|------------------------------|-------------------|---|-------------------------|---------------------|
| ACES Power Marketing | Brian Van Gheem | 6 | NA - Not Applicable | ACES Standards Collaborators | Greg Froehling | Rayburn Country Electric Cooperative, Inc. | 3 | SPP RE |
| | | | | | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | RF |
| | | | | | Shari Heino | Brazos Electric Power Cooperative, Inc. | 1,5 | Texas RE |
| | | | | | Dave Viar | Southern Maryland Electric Cooperative | 3,4 | RF |
| | | | | | Amber Skillern | East Kentucky Power Cooperative | 1,3 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Karl Kohlrus | Prairie Power, Inc. | 1,3 | SERC |
| | | | | | Mark Ringhausen | Old Dominion Electric Cooperative | 3,4 | SERC |
| Entergy | Julie Hall | 6 | | Entergy/NERC Compliance | Oliver Burke | Entergy - Entergy Services, Inc. | 1 | SERC |
| | | | | | Jaclyn Massey | Entergy - Entergy Services, Inc. | 5 | SERC |
| Northeast Power | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC | Guy Zito | Northeast Power Coordinating Council | NA - Not Applicable | NPCC |

Coordinating
 Council

| | | | |
|-------------------|------------------------------------|---|------|
| Randy MacDonald | New Brunswick Power | 2 | NPCC |
| Wayne Sipperly | New York Power Authority | 4 | NPCC |
| Glen Smith | Entergy Services | 4 | NPCC |
| Brian Robinson | Utility Services | 5 | NPCC |
| Bruce Metruck | New York Power Authority | 6 | NPCC |
| Alan Adamson | New York State Reliability Council | 7 | NPCC |
| Edward Bedder | Orange & Rockland Utilities | 1 | NPCC |
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Michele Tondalo | UI | 1 | NPCC |
| Laura Mcleod | NB Power | 1 | NPCC |
| Michael Forte | Con Edison | 1 | NPCC |
| Kelly Silver | Con Edison | 3 | NPCC |
| Peter Yost | Con Edison | 4 | NPCC |
| Brian O'Boyle | Con Edison | 5 | NPCC |
| Michael Schiavone | National Grid | 1 | NPCC |
| Michael Jones | National Grid | 3 | NPCC |

| | | | | | | | | |
|----------------------------------|-----------------|---|--------|----------------------------|--------------------|--|---------------------|--------|
| | | | | | David Ramkalawan | Ontario Power Generation Inc. | 5 | NPCC |
| | | | | | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Sylvain Clermont | Hydro Quebec | 1 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Chantal Mazza | Hydro Quebec | 2 | NPCC |
| Southwest Power Pool, Inc. (RTO) | Shannon Mickens | 2 | SPP RE | SPP Standards Review Group | Shannon Mickens | Southwest Power Pool Inc. | 2 | SPP RE |
| | | | | | Deborah McEndaffer | Midwest Energy, Inc | NA - Not Applicable | SPP RE |
| | | | | | Mike Kidwell | Empire District Electric Company | 1,3,5 | SPP RE |
| | | | | | Robert Hirschak | Cleco Corporation | 6 | SPP RE |

| | | | | | | | | |
|---------------------------------------|-------------|-------|---------|--|------------------|---------------------------------------|---|--------|
| | | | | | Kevin Giles | Westar Energy | 1 | SPP RE |
| | | | | | Tara Lightner | Sunflower Electric Power Corporation | 1 | SPP RE |
| PPL - Louisville Gas and Electric Co. | Shelby Wade | 3,5,6 | RF,SERC | Louisville Gas and Electric Company and Kentucky Utilities Company | Charles Freibert | PPL - Louisville Gas and Electric Co. | 3 | SERC |
| | | | | | Dan Wilson | PPL - Louisville Gas and Electric Co. | 5 | SERC |
| | | | | | Linn Oelker | PPL - Louisville Gas and Electric Co. | 6 | SERC |

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR for MOD-032-1? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Thomas Foltz - AEP - 3,5

Answer No

Document Name

Comment

While AEP supports the proposed direction and scope of the drafting team as expressed in the two SARs, AEP seeks clarity as to why more than one SAR is being proposed for a single project. While a project’s SAR may certainly be revised over time as needed, we see no allowance within Appendix 3A (Standards Process Manual) for multiple, concurrent SARs to govern a single project.

Likes 0

Dislikes 0

Response

Shelby Wade - PPL - Louisville Gas and Electric Co. - 3,5,6 - SERC, Group Name Louisville Gas and Electric Company and Kentucky Utilities Company

Answer No

Document Name

Comment

The project scope proposes to remove Load Serving Entity (LSE) from Attachment 1 and the Applicability Section (4.1.3) of MOD-032-1 and replace with Distribution Provider (DP) as the applicable entity. The inclusion of the LSE in MOD-032-1 was to allow Planning Coordinators (PC) and Transmission Planners (TP) to request Demand data from the LSE (see Attachment 1 to MOD-032-1). To replace the LSE with DP is not effective because Demand data is information that a DP does not have. If the LSE is replaced with the DP in MOD-032-1, in order to comply, a DP would need to request the LSE data (i.e., Demand) from the Transmission Owner (TO) who would obtain the LSE data through

their OATT processes. This process is unnecessarily cumbersome. Since Planning Coordinators and Transmission Planners can request LSE data from Transmission Owners our suggestion is to simply remove LSE from the Applicability Section (4.1.3), requirements R2 and R3, and Attachment 1 of MOD-032-1 (but replace LSE with the TO where Demand data is listed in Attachment 1).

Additionally, we believe there is value in finalizing needed updates to the NERC Functional Model and the Functional Model Technical Document as posted to and commented upon by the industry in September 2016 prior to approving this SAR. Those documents are a useful guide in understanding the proper scope of the functional roles and how the elimination of certain functional categories can be addressed in the relevant reliability standards.

Likes 0

Dislikes 0

Response

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF

Answer No

Document Name

Comment

MOD-032 requires data be provided by applicable entity functions that have been retired. For this standard, this data is critical and the industry cannot rely on getting data from a functional entity that has no compliance obligation to provide it.

Likes 0

Dislikes 0

Response

Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer No

| | |
|--|-----|
| Document Name | |
| Comment | |
| <ol style="list-style-type: none"> 1. We believe references to the reassignment of Load-Serving Entity (LSE) requirements should be broader, as several previous standard development projects identified other alternative functions (e.g. Resource Planner) instead of one single function (i.e. Distribution Provider). Moreover, the objective should allow this Standard Drafting Team to revise the requirement to align with those functions' capabilities. We caution the use of references to model distribution facilities, as these are outside the scope of the BES definition and Risk-based Registration. Furthermore, many registered entities may operate with smaller non-registered entities and end-user customers that are not obligated to provide such information to their utilities (e.g. rooftop solar PV resources). We propose limiting the language of the scope and objectives to only focus on the reassignment of LSE requirements with applicable functions and revising such requirements to align with those functions' capabilities. 2. An objective should be included to assess other requirements that could be deemed administrative or align with other Paragraph 81 criteria. Over the past two years, industry and the ERO Enterprise have identified these requirements through a standards grading evaluation conducted by Regional Entity and NERC Technical Committee representatives. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| We agree with the need to review the alignment issue, but reserve judgment on the proposed changes to the affected standards. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|---|-----|
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Neil Swearingen - Salt River Project - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| SRP supports the objectives of Project 2017-07 as described in the SAR. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rick Applegate - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Julie Hall - Entergy - 6, Group Name Entergy/NERC Compliance | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| | |
| Daniel Grinkevich - Con Ed - Consolidated Edison Co. of New York - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Elizabeth Axson - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Nicolas Turcotte - Hydro-Quebec TransEnergie - 1 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

| | |
|---|-----|
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Michelle Amarantos - APS - Arizona Public Service Co. - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|-----------------|--|
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer

Document Name

Comment

We thank you for this opportunity to provide these comments.

Likes 0

Dislikes 0

Response

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF

Answer

Document Name

Comment

The SPP Standards Review Group recommends that the Standards Authorization Request (SAR) author capitalizes the term ' bulk power system' which is mentioned in the Purpose or Goal Section of the document (page 1). From our perspective, the term is defined in the NERC Glossary of Terms and not capitalizing it may create confusion on the terms purpose and intent.

Additionally, we recommend that the drafting team review the definition of the term 'Distribution Provider' in the NERC Glossary of Terms, RoP (Appendix 2) and the Functional Model. Through our observation, the definition properly aligns with only two of the three documents (The NERC Glossary of Terms and RoP) which can be reviewed in the definitions shown below.

DP (Glossary of Terms and RoP) - Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the distribution function at any voltage.

DP (Functional Model) - The functional entity that provides facilities that interconnect an End-use Customer load and the electric system for the transfer of electrical energy to the End-use Customer.

From our perspective, this doesn’t promote consistency in the NERC Documents. We recommend the drafting team develops a SAR to help initiate the proper alignment of the Functional Model with the other two NERC Documents since it’s referenced in the current SAR. However, if the drafting team feels that there is no need to align the Functional Model, we would recommend removing the use of the Functional Model from all NERC Documentation. At its current state, the document has the potential to cause confusion with the interpretation of other defined term or terms referenced in the two NERC Documents (Glossary of Terms and RoP).

The SPP Standards Review Group has concerns in reference to the DP replacing the LSE in MOD-032.

Currently there is not a DP contact to obtain modeling data, so the data might not be submitted to SPP in a timely manner or at all. SPP would need time to establish the DP contacts.

Also, we feel that there may be jurisdictional issues pertaining to an entity sharing modeling data if they aren’t registered with NERC as a DP.

Finally, there is a concern in reference to the DP not providing the modeling data on the behalf of the LSE due to the perception they aren’t responsible to provide the LSE Modeling data.

The SPP Standards Review Group would ask that the drafting team takes into consideration the addition of the Underfrequency Load Shedding (UFLS) - only DPs to MOD-32-1 Standard Applicability Section. We feel that this entity may have an impact on the role and responsibilities of providing data to help create productive models.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

| | |
|--|--|
| Answer | |
| Document Name | |
| Comment | |
| <p>Functional category removal has the potential to impact the newly designated applicable entity for the standard. If applicable, how will the impact be mitigated? Should this be taken into account as part of a revised implementation plan?</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | |
| Document Name | |
| Comment | |
| <p>The SPP Standards Review Group recommends that the Standards Authorization Request (SAR) author capitalizes the term ‘ bulk power system’ which is mentioned in the Purpose or Goal Section of the document (page 1). From our perspective, the term is defined in the NERC Glossary of Terms and not capitalizing it may create confusion on the terms purpose and intent.</p> <p>Additionally, we recommend that the drafting team review the definition of the term ‘Distribution Provider’ in the NERC Glossary of Terms, RoP (Appendix 2) and the Functional Model. Through our observation, the definition properly aligns with only two of the three documents (The NERC Glossary of Terms and RoP) which can be reviewed in the definitions shown below.</p> <p>DP (Glossary of Terms and RoP) - Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the distribution function at any voltage.</p> | |

DP (Functional Model) - The functional entity that provides facilities that interconnect an End-use Customer load and the electric system for the transfer of electrical energy to the End-use Customer.

From our perspective, this doesn't promote consistency in the NERC Documents. We recommend the drafting team develops a SAR to help initiate the proper alignment of the Functional Model with the other two NERC Documents since it's referenced in the current SAR. However, if the drafting team feels that there is no need to align the Functional Model, we would recommend removing the use of the Functional Model from all NERC Documentation. At its current state, the document has the potential to cause confusion with the interpretation of other defined term or terms referenced in the two NERC Documents (Glossary of Terms and RoP).

The SPP Standards Review Group has concerns in reference to the DP replacing the LSE in MOD-032.

Currently there is not a DP contact to obtain modeling data, so the data might not be submitted to SPP in a timely manner or at all. SPP would need time to establish the DP contacts.

Also, we feel that there may be jurisdictional issues pertaining to an entity sharing modeling data if they aren't registered with NERC as a DP.

Finally, there is a concern in reference to the DP not providing the modeling data on the behalf of the LSE due to the perception they aren't responsible to provide the LSE Modeling data.

The SPP Standards Review Group would ask that the drafting team takes into consideration the addition of the Underfrequency Load Shedding (UFLS) - only DPs to MOD-32-1 Standard Applicability Section. We feel that this entity may have an impact on the role and responsibilities of providing data to help create productive models.

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | |
| Document Name | |

| Comment | |
|---|---|
| Functional category removal has the potential to impact the newly designated applicable entity for the standard. If applicable, how will the impact be mitigated? Should this be taken into account as part of a revised implementation plan? | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| None | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |

Standard Authorization Request (SAR) Form

Complete and please email this form, with attachment(s) to: sarcomm@nerc.net

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|---|--|--------------------------|--|
| SAR Title: | Standards Alignment with Registration | | |
| Date Submitted: | | | |
| SAR Requester | | | |
| Name: | NERC Standards Staff | | |
| Organization: | NERC | | |
| Telephone: | | Email: | |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> | New Standard | <input type="checkbox"/> | Imminent Action/ Confidential Issue (SPM Section 10) |
| <input checked="" type="checkbox"/> | Revision to Existing Standard | <input type="checkbox"/> | Variance development or revision |
| <input type="checkbox"/> | Add, Modify or Retire a Glossary Term | <input type="checkbox"/> | Other (Please specify) |
| <input type="checkbox"/> | Withdraw/retire an Existing Standard | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input checked="" type="checkbox"/> | Regulatory Initiation | <input type="checkbox"/> | NERC Standing Committee Identified |
| <input type="checkbox"/> | Emerging Risk (Reliability Issues Steering Committee) Identified | <input type="checkbox"/> | Enhanced Periodic Review Initiated |
| <input type="checkbox"/> | Reliability Standard Development Plan | <input type="checkbox"/> | Industry Stakeholder Identified |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| This project will align the standards that are impacted by the Risk-Based Registration (RBR) initiative. | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| This project aligns Standards with the FERC-approved RBR initiative. | | | |
| Project Scope (Define the parameters of the proposed project): | | | |
| This project will review and align standards impacted by the RBR initiative. | | | |
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g. research paper) to guide development of the Standard or definition): | | | |
| This project will formally address any remaining edits to the standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be replaced by either the Distribution Provider (DP) or the Balancing Authority (BA). Additionally, PRC-005 will replace the distribution provider with the Underfrequency Load Shedding (UFLS)-only DPs. | | | |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

Requested information

The clean-up effort of the standards can be categorized into the following:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward. A SAR has been submitted to modify the MOD standards, and it would be posted with the Alignment with Registration SAR.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. The impacted standards include the BAL, CIP, IRO, and TOP family of standards. Additionally PRC-005 will be updated to replace distribution providers with the more-limited UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004 and NUC-001 standards. In other words, rather than making the revisions immediately, this information would be provided to the periodic review teams currently reviewing INT-004 and NUC-001 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project):

No additional costs outside of the time and resources needed to serve on the SAR and SC team.

Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g. Dispersed Generation Resources):

NA

To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g. Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions):

Since LSE is being replaced by either a Distribution Provider or Balancing Authority for the standards that need to be updated, those entities will like be best suited for the MOD and PRC updates.

Do you know of any consensus building activities² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity.

NA

Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so which standard(s) or project number(s)?

A separate SAR on the MOD standards was recently received that would be addressed by this project.

Are there alternatives (e.g. guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives.

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|--|----------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | Yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|--|-------------|
| Region(s)/ Interconnection | Explanation |
| <i>e.g.</i> NPCC | |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate) | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff <input type="checkbox"/> Draft SAR presented to SC for acceptance <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> Final SAR endorsed by the SC <input type="checkbox"/> SAR assigned a Standards Project by NERC <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-----------------|-----------------------------|------------------|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January X, 2017 | Standards Information Staff | Revised |

Unofficial Comment Form

Project 2017-07 Standards Alignment with Registration

MOD-032-1 Standards Authorization Request

Do not use this form for submitting comments. Use the [electronic form](#) to submit comments on **Project 2017-07 Standards Alignment with Registration**. The electronic form must be submitted by **8 p.m. Eastern, Wednesday, August 30, 2017**.

Additional information is available on the [Project 2017-07 Standards Alignment with Registration](#) page. If you have questions, contact Standards Developer, [Laura Anderson](#) (via email), or at 404-446-9671.

Background Information

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) Initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system.

FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria. Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration is focused on making the tailored Reliability Standards updates necessary to reflect the retirement of PSEs, IAs, and LSEs (as well as all of their applicable references). This alignment includes three categories:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. Additionally PRC-005 will be updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004 and NUC-001 standards. In other words, rather than making the revisions immediately, this information would be provided to the periodic review teams currently reviewing

INT-004 and NUC-001 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Questions

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR for MOD-032-1? If not, please explain why you do not agree and, if possible, **provide specific language revisions that would make it acceptable to you.**

Yes

No

Comments:

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Comments:

Standards Announcement

Project 2017-07 Standards Alignment with Registration and MOD-032-1 Standards Authorization Request

Formal Comment Periods Open through August 30, 2017

Now Available

Simultaneous 30-day formal comment periods on the Standard Authorization Request (SAR) for Standards Alignment with Registration and the SAR for **MOD-032-1 – Data for Power System Modeling and Analysis** are open through **8 p.m. Eastern, Wednesday, August 30, 2017**.

Commenting

Use the [electronic form](#) to submit comments on the SAR. If you experience any difficulties using the electronic form, contact [Nasheema Santos](#). The unofficial Word versions of the comment forms are posted on the [project page](#).

If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).

- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The drafting team will review all responses received during the comment period and determine the next steps of the project.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446- 9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE

Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2017-07 Standards Alignment with Registration SAR
Comment Period Start Date: 8/1/2017
Comment Period End Date: 8/30/2017
Associated Ballots:

There were 19 sets of responses, including comments from approximately 64 different people from approximately 52 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|--------------------------------------|-----------------|----------------------|---------------------|------------------------------|-------------------|---|-------------------------|---------------------|
| ACES Power Marketing | Brian Van Gheem | 6 | NA - Not Applicable | ACES Standards Collaborators | Greg Froehling | Rayburn Country Electric Cooperative, Inc. | 3 | SPP RE |
| | | | | | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | RF |
| | | | | | Shari Heino | Brazos Electric Power Cooperative, Inc. | 1,5 | Texas RE |
| | | | | | Dave Viar | Southern Maryland Electric Cooperative | 3,4 | RF |
| | | | | | Amber Skillern | East Kentucky Power Cooperative | 1,3 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Karl Kohlrus | Prairie Power, Inc. | 1,3 | SERC |
| | | | | | Mark Ringhausen | Old Dominion Electric Cooperative | 3,4 | SERC |
| Entergy | Julie Hall | 6 | | Entergy/NERC Compliance | Oliver Burke | Entergy - Entergy Services, Inc. | 1 | SERC |
| | | | | | Jaclyn Massey | Entergy - Entergy Services, Inc. | 5 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC | Guy Zito | Northeast Power Coordinating Council | NA - Not Applicable | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |

| | | | |
|-------------------|--|---|------|
| Wayne Sipperly | New York Power Authority | 4 | NPCC |
| Glen Smith | Entergy Services | 4 | NPCC |
| Brian Robinson | Utility Services | 5 | NPCC |
| Bruce Metruck | New York Power Authority | 6 | NPCC |
| Alan Adamson | New York State Reliability Council | 7 | NPCC |
| Edward Bedder | Orange & Rockland Utilities | 1 | NPCC |
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Michele Tondalo | UI | 1 | NPCC |
| Laura Mcleod | NB Power | 1 | NPCC |
| Michael Forte | Con Edison | 1 | NPCC |
| Kelly Silver | Con Edison | 3 | NPCC |
| Peter Yost | Con Edison | 4 | NPCC |
| Brian O'Boyle | Con Edison | 5 | NPCC |
| Michael Schiavone | National Grid | 1 | NPCC |
| Michael Jones | National Grid | 3 | NPCC |
| David Ramkalawan | Ontario Power Generation Inc. | 5 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| Kathleen Goodman | ISO-NE | 2 | NPCC |
| Greg Campoli | NYISO | 2 | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| Sean Bodkin | Dominion - Dominion | 6 | NPCC |

| | | | | | | | | |
|---------------------------------------|-----------------|-------|---------|--|--------------------|---------------------------------------|---------------------|--------|
| | | | | | | Resources, Inc. | | |
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Sylvain Clermont | Hydro Quebec | 1 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Chantal Mazza | Hydro Quebec | 2 | NPCC |
| Southwest Power Pool, Inc. (RTO) | Shannon Mickens | 2 | SPP RE | SPP Standards Review Group | Shannon Mickens | Southwest Power Pool Inc. | 2 | SPP RE |
| | | | | | Deborah McEndaffer | Midwest Energy, Inc | NA - Not Applicable | SPP RE |
| | | | | | Mike Kidwell | Empire District Electric Company | 1,3,5 | SPP RE |
| | | | | | Robert Hirschak | Cleco Corporation | 6 | SPP RE |
| | | | | | Kevin Giles | Westar Energy | 1 | SPP RE |
| | | | | | Tara Lightner | Sunflower Electric Power Corporation | 1 | SPP RE |
| PPL - Louisville Gas and Electric Co. | Shelby Wade | 3,5,6 | RF,SERC | Louisville Gas and Electric Company and Kentucky Utilities Company | Charles Freibert | PPL - Louisville Gas and Electric Co. | 3 | SERC |
| | | | | | Dan Wilson | PPL - Louisville Gas and Electric Co. | 5 | SERC |
| | | | | | Linn Oelker | PPL - Louisville Gas and Electric Co. | 6 | SERC |

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Thomas Foltz - AEP - 3,5

Answer No

Document Name

Comment

While AEP supports the proposed direction and scope of the drafting team as expressed in the two SARs, AEP seeks clarity as to why more than one SAR is being proposed for a single project. While a project's SAR may certainly be revised over time as needed, we see no allowance within Appendix 3A (Standards Process Manual) for multiple, concurrent SARs to govern a single project.

Likes 0

Dislikes 0

Response

Nicolas Turcotte - Hydro-Qu?bec TransEnergie - 1

Answer No

Document Name

Comment

We agree with the proposed objectives of the SAR but believe the scope should be expanded to include a review of the Glossary. (The SAR form needs an additional box check in the "SAR Type" i.e. "Add, Modify or Retire a Glossary Term".)

The terms Interchange Authority (IA), Load-Serving Entity (LSE) and Purchasing-Selling Entities (PSE) are used in NERC Glossary definitions and NERC should make sure that these definitions are still valid and aligned with the standards in which they are used.

For example, the NERC Glossary uses "Interchange Authority" in the definitions of Arranged Interchange, Confirmed Interchange, and Request for Interchange and these terms as well as the definition of "Interchange Authority" itself do not necessarily align with the project on the INT standards where the BA took on the IA's reliability tasks.

Also LSE is used in the definitions of Energy Emergency, Interruptible Load, DSM, etc

Likes 0

Dislikes 0

Response

Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer No

Document Name

Comment

1. We believe references to the reassignment of Load-Serving Entity (LSE) requirements should be broader instead of limiting the selection to either the Distribution Provider (DP) or the Balancing Authority (BA). During previous standard development projects, other functions (e.g. Resource Planner) were identified as applicable instead of DPs and BAs. Moreover, the objective should allow this Standard Drafting Team to revise the requirement to align with those functions' capabilities. Many registered entities may operate with smaller non-registered entities and end-user customers that are not obligated to provide such information to their utilities (e.g. rooftop solar PV resources). We propose revising the objective to read "references to LSE requirements will be reassigned to applicable functions and revised to align with those functions' capabilities."
2. An objective should be included to assess other requirements that could be deemed administrative or align with other Paragraph 81 criteria. Over the past two years, industry and the ERO Enterprise have identified these requirements through a standards grading evaluation conducted by Regional Entity and NERC Technical Committee representatives.

Likes 0

Dislikes 0

Response

Michelle Amarantos - APS - Arizona Public Service Co. - 1,3,5,6

Answer No

Document Name

Comment

AZPS requests clarification to ensure that the directives to the SDT are clear and definitive. To eliminate ambiguity, AZPS recommends that the following sentence be revised as indicated below.

"The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to:

- Delete remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs);
- Revise references to the Load-Serving Entity (LSEs) by replacing these references with:
 - either the Distribution Provider (DP) or the Balancing Authority (BA);
 - Distribution Provider; or
 - Balancing Authority."

In addition, AZPS requests clarification regarding how the determination will be made to replace LSEs with either DP or BA, DP, or BA. For example, will the SDT be required to establish criteria to determine if LSE is replaced with a DP, BA, Option for Either or None (removal)?

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| We agree with the need to review the alignment issue, but reserve judgment on the proposed changes to the affected standards. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Neil Swearingen - Salt River Project - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| SRP supports the objectives of Project 2017-07 as described in the SAR. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Rick Applegate - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response**Julie Hall - Entergy - 6, Group Name** Entergy/NERC Compliance**Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Daniel Grinkevich - Con Ed - Consolidated Edison Co. of New York - 1,3,5,6****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Elizabeth Axson - Electric Reliability Council of Texas, Inc. - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Shelby Wade - PPL - Louisville Gas and Electric Co. - 3,5,6 - SERC, Group Name Louisville Gas and Electric Company and Kentucky Utilities Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Ramkalawan - Ontario Power Generation Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sergio Banuelos - Tri-State G and T Association, Inc. - 1,3,5 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer

Document Name

Comment

1. The SAR type should include the retirement of a standard, as there is a possibility that all requirements of a standard could be retired as part of this project.
2. The unique characteristics of the BES facilities that may be impacted by this proposed standard development project should be identified as "None" instead of not applicable.
3. We believe two Reliability Principles are applicable to this standard development project. This project will revise requirements for applicable entities that plan and operate interconnected bulk power systems in a coordinated manner. Moreover, the project will revise requirements applicable to identifying information that is necessary for the planning and operation of interconnected bulk power systems and its availability for responsible entities.
4. We thank you for this opportunity to provide these comments.

Likes 0

Dislikes 0

Response

Sergio Banuelos - Tri-State G and T Association, Inc. - 1,3,5 - MRO,WECC

Answer

Document Name

Comment

Based on the proposed changes to the Applicability Section of PRC-005, Tri-State believes PRC-004 applicability should also be updated to replace Distribution Provider with UFLS-only DP. As currently written in the SAR, we believe the PRC-005 applicability would become inconsistent with the current version of PRC-004.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE is concerned with the proposed change to the Applicability section in Reliability Standard PRC-005-6. The SAR proposes to replace

Distribution Provider (DP) with Underfrequency Load Shedding (UFLS)-only DPs. This could result in section 4.1 conflicting with section 4.2.1, which includes Protection Systems and Sudden Pressure Relaying that are installed for the purpose of detecting Faults on BES elements. This could include DPs that do not have UFLS.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer

Document Name

Comment

- a) Functional category removal has the potential to impact the newly designated applicable entity for the standard. If applicable how will the impact be mitigated? Should this be taken into account as part of a revised implementation plan?
- b) Alignment category number 2 should include the currently existing, in progress, standards revision as part of the regional reliability standards revision driven by NPCC. Specifically NERC should coordinate with NPCC the revision of the standard PRC-006-NPCC-2 Automatic Underfrequency Load Shedding. For example Requirement Part 16.3 "Have compensatory load shedding, as provided by a Distribution Provider or Transmission Owner that is adequate to compensate for the loss of their generator due to early tripping." should now be transferred to Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP). In other words the NERC revision of standards should be coordinated with the regional entities to avoid having conflicting regulatory requirements in effect at the same time (i.e. different owners for the same regulatory requirement)
- c) There is a potential risk for conflicting regulatory requirements due to different timelines for the Periodic Review of various standards.

The SAR form should check an additional box in the "SAR Type" i.e. "Add, Modify or Retire a Glossary Term". The terms Interchange Authority (IA), Load-Serving Entity (LSE) and Purchasing-Selling Entities are used in NERC Glossary definitions and the SAR or Standard drafting team should make sure that these definitions are still valid. For example, the NERC Glossary uses "Interchange Authority" in the definitions of Arranged Interchange, Confirmed Interchange, and Request for Interchange and these terms as well as the definition of "Interchange Authority" itself do not necessarily align with the project on the INT standards where the BA took on the IA's reliability tasks. Also LSE is used in the definitions of Energy Emergency, Interruptible Load, DSM, etc.

Likes 0

Dislikes 0

Response

David Ramkalawan - Ontario Power Generation Inc. - 5

Answer

Document Name

Comment

OPG is of the opinion that:

1. Functional category removal has the potential to impact the newly designated applicable entity for the standard. If applicable how will the impact be mitigated? Should this be taken into account as part of a revised implementation plan?
2. Alignment category number 2 should include the currently existing, in progress, standards revision as part of the regional reliability standards revision driven by NPCC. Specifically NERC should coordinate with NPCC the revision of the standard PRC-006-NPCC-2 Automatic Underfrequency Load Shedding. For example Requirement Part 16.3 “Have compensatory load shedding, as provided by a Distribution Provider or Transmission Owner that is adequate to compensate for the loss of their generator due to early tripping.” should now be transferred to Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP). In other words the NERC revision of standards should be coordinated with the regional entities to avoid having conflicting regulatory requirements in effect at the same time (i.e. different owners for the same regulatory requirement)
3. There is a potential risk for conflicting regulatory requirements due to different timelines for the Periodic Review of various standards.

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer

Document Name

Comment

The SPP Standards Review Group recommends that the drafting team review the definitions of the terms ‘Distribution Provider’ and ‘Balancing Authority’ in the NERC Glossary of Terms, RoP (Appendix 2) and the Functional Model. Through our observation, the definitions are properly aligned with only two of the three documents (The NERC Glossary of Terms and RoP) which can be reviewed in the definitions shown below.

DP (Glossary of Terms and RoP) - Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the distribution function at any voltage.

DP (Functional Model) - The functional entity that provides facilities that interconnect an End-use Customer load and the electric system for the transfer of electrical energy to the End-use Customer.

BA (Glossary of Terms and RoP) - The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.

BA (Functional Model) - The functional entity that integrates resource plans ahead of time, maintains generation-load-interchange-balance within a Balancing Authority Area, and contributes to Interconnection frequency in real time.

From our perspective, this doesn’t promote consistency in the NERC Documents. We recommend the drafting team develops a SAR to help initiate the proper alignment of the Functional Model with the other two NERC Documents since it’s referenced in the current SAR. However, if the drafting team feels that there is no need to align the Functional Model, we would recommend removing the use of the Functional Model from all NERC Documentation. At its current state, the document has the potential to cause confusion with the interpretation of other defined terms referenced in the

two NERC Documents (Glossary of Terms and RoP).

Likes 0

Dislikes 0

Response

Shelby Wade - PPL - Louisville Gas and Electric Co. - 3,5,6 - SERC, Group Name Louisville Gas and Electric Company and Kentucky Utilities Company

Answer

Document Name

Comment

Within the Detailed Description section of the SAR, the clean-up effort of the standards are divided into three categories: **(1)** removal of the retired function and replacement by another function, **(2)** removal of the deregistered functional entities and their applicable requirements/references, and **(3)** initiatives that can address RBR updates through the periodic review process.

The second sentence of the Detailed Description states “The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be replaced by either the Distribution Provider (DP) or the Balancing Authority (BA).”

As currently written, the second sentence of the Detailed Description indicates removing and replacing references to the LSE with the DP as the only change that will be given consideration with respect to the LSE-related changes (Category 1 of the clean-up effort). It does not contemplate consideration of simply removing the applicable requirements with respect to and references to the LSE within relevant standards (Category 2 of the clean-up effort). To correct this misalignment or potential conflict within the Detailed Description, we recommend that the second sentence of the Detailed Description be revised to state:

“The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the applicable requirements with respect to and references to Purchasing-Selling Entities (PSEs), Interchange Authorities (IAs), and Load Serving Entities (LSEs) and their applicable requirements/references; or with respect to LSEs, remove the applicable requirements with respect to and replace the references to the LSE with either the Distribution Provider (DP) or the Balancing Authority (BA) or another functional role if appropriate.”

Additionally, we believe there is value in finalizing needed updates to the NERC Functional Model and the Functional Model Technical Document as posted to and commented upon by the industry in September 2016 prior to approving this SAR. Those documents are a useful guide in understanding the proper scope of the functional roles and how the elimination of certain functional categories can be addressed in the relevant reliability standards.

Likes 0

Dislikes 0

Response

Michael Jones - National Grid USA - 1,3,5

Answer

Document Name

Comment

Should PRC-005 be applicable to Distribution Providers and the sub-set UFLS-only DP? For PRC-005, it may not be appropriate to replace Distribution Providers with the more limiting "UFLS-only DP" applicability.

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Consideration of Comments

Project Name: 2017-07 Standards Alignment with Registration SAR
Comment Period Start Date: 8/1/2017
Comment Period End Date: 8/30/2017
Associated Ballots:

There were 19 sets of responses, including comments from approximately 64 different people from approximately 52 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|----------------------|-----------------|------------|---------------------|------------------------------|-------------------|---|-------------------------|---------------------|
| ACES Power Marketing | Brian Van Gheem | 6 | NA - Not Applicable | ACES Standards Collaborators | Greg Froehling | Rayburn Country Electric Cooperative, Inc. | 3 | SPP RE |
| | | | | | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | RF |
| | | | | | Shari Heino | Brazos Electric Power Cooperative, Inc. | 1,5 | Texas RE |
| | | | | | Dave Viar | Southern Maryland Electric Cooperative | 3,4 | RF |
| | | | | | Amber Skillern | East Kentucky Power Cooperative | 1,3 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Karl Kohlrus | Prairie Power, Inc. | 1,3 | SERC |
| | | | | | Mark Ringhausen | Old Dominion Electric Cooperative | 3,4 | SERC |
| Entergy | Julie Hall | 6 | | Entergy/NERC Compliance | Oliver Burke | Entergy - Entergy Services, Inc. | 1 | SERC |

| | | | | | | | | |
|--------------------------------------|------------|----------------------|------|-----|-----------------|--------------------------------------|---------------------|------|
| | | | | | Jaclyn Massey | Entergy - Entergy Services, Inc. | 5 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC | Guy Zito | Northeast Power Coordinating Council | NA - Not Applicable | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Wayne Sipperly | New York Power Authority | 4 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| | | | | | Bruce Metruck | New York Power Authority | 6 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |
| | | | | | Edward Bedder | Orange & Rockland Utilities | 1 | NPCC |
| | | | | | David Burke | Orange & Rockland Utilities | 3 | NPCC |
| | | | | | Michele Tondalo | UI | 1 | NPCC |
| | | | | | Laura Mcleod | NB Power | 1 | NPCC |
| | | | | | Michael Forte | Con Edison | 1 | NPCC |
| | | | | | Kelly Silver | Con Edison | 3 | NPCC |
| Peter Yost | Con Edison | 4 | NPCC | | | | | |

| | | | | | | | | |
|----------------------------------|-----------------|---|--------|----------------------------|--------------------|--|---------------------|--------|
| | | | | | Brian O'Boyle | Con Edison | 5 | NPCC |
| | | | | | Michael Schiavone | National Grid | 1 | NPCC |
| | | | | | Michael Jones | National Grid | 3 | NPCC |
| | | | | | David Ramkalawan | Ontario Power Generation Inc. | 5 | NPCC |
| | | | | | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Sylvain Clermont | Hydro Quebec | 1 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Chantal Mazza | Hydro Quebec | 2 | NPCC |
| Southwest Power Pool, Inc. (RTO) | Shannon Mickens | 2 | SPP RE | SPP Standards Review Group | Shannon Mickens | Southwest Power Pool Inc. | 2 | SPP RE |
| | | | | | Deborah McEndaffer | Midwest Energy, Inc | NA - Not Applicable | SPP RE |

| | | | | | | | | |
|---------------------------------------|-------------|-------|---------|--|------------------|---------------------------------------|-------|--------|
| | | | | | Mike Kidwell | Empire District Electric Company | 1,3,5 | SPP RE |
| | | | | | Robert Hirschak | Cleco Corporation | 6 | SPP RE |
| | | | | | Kevin Giles | Westar Energy | 1 | SPP RE |
| | | | | | Tara Lightner | Sunflower Electric Power Corporation | 1 | SPP RE |
| PPL - Louisville Gas and Electric Co. | Shelby Wade | 3,5,6 | RF,SERC | Louisville Gas and Electric Company and Kentucky Utilities Company | Charles Freibert | PPL - Louisville Gas and Electric Co. | 3 | SERC |
| | | | | | Dan Wilson | PPL - Louisville Gas and Electric Co. | 5 | SERC |
| | | | | | Linn Oelker | PPL - Louisville Gas and Electric Co. | 6 | SERC |

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Summary Responses:

The SAR Drafting Team received comments requesting clarity as to why more than one SAR was being proposed for Project 2017-07 Standards Alignment with Registration.

- The SAR Drafting Team has merged the two SARs into a single SAR for Project 2017-07.

Several commenters requested that the SAR Drafting Team expand the scope of the project and include in the SAR a review of the NERC Glossary of Terms and to validate that the terms *Interchange Authority (IA)*, *Load-Serving Entity (LSE)*, and *Purchasing-Selling Entities (PSE)* are appropriate and align with the standards in which they are used. In addition, there were comments related to the definition of Underfrequency Load Serving (UFLS)-only Distribution Providers (DPs).

- The SAR Drafting Team considered these comments but does not agree with changing the SAR to include a review of the NERC Glossary of Terms for IA, LSE and PSE. The LSE, IA, and PSE will continue to be referenced in resource documents, etc., as the function does not go away.
- UFLS-only DPs are a limited number of entities who have UFLS obligations, but who otherwise do not meet any of the registration criteria of a DP. While the term “Distribution Provider” is defined in the NERC Glossary of Terms, there is no reason to define UFLS-only DPs as a unique term, as it is only a subset of the functional registration DP.

To address comments received, the SAR Drafting Team has updated the language of the SAR, which now states, “remove or replace references to the Load-Serving Entity (LSEs) by either the Distribution Provider (DP), the Balancing Authority (BA), or other appropriate functional entity.”

Thomas Foltz - AEP - 3,5

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |

While AEP supports the proposed direction and scope of the drafting team as expressed in the two SARs, AEP seeks clarity as to why more than one SAR is being proposed for a single project. While a project’s SAR may certainly be revised over time as needed, we see no allowance within Appendix 3A (Standards Process Manual) for multiple, concurrent SARs to govern a single project.

Likes 0

Dislikes 0

Response

Nicolas Turcotte - Hydro-Québec TransEnergie - 1

Answer No

Document Name

Comment

We agree with the proposed objectives of the SAR but believe the scope should be expanded to include a review of the Glossary. (The SAR form needs an additional box check in the “SAR Type” i.e. “Add, Modify or Retire a Glossary Term”.)

The terms Interchange Authority (IA), Load-Serving Entity (LSE) and Purchasing-Selling Entities (PSE) are used in NERC Glossary definitions and NERC should make sure that these definitions are still valid and aligned with the standards in which they are used.

For example, the NERC Glossary uses “Interchange Authority” in the definitions of Arranged Interchange, Confirmed Interchange, and Request for Interchange and these terms as well as the definition of “Interchange Authority” itself do not necessarily align with the project on the INT standards where the BA took on the IA’s reliability tasks.

Also LSE is used in the definitions of Energy Emergency, Interruptible Load, DSM, etc

Likes 0

Dislikes 0

Response

| | |
|--|----|
| Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators | |
| Answer | No |
| Document Name | |
| Comment | |
| <ol style="list-style-type: none"> 1. We believe references to the reassignment of Load-Serving Entity (LSE) requirements should be broader instead of limiting the selection to either the Distribution Provider (DP) or the Balancing Authority (BA). During previous standard development projects, other functions (e.g. Resource Planner) were identified as applicable instead of DPs and BAs. Moreover, the objective should allow this Standard Drafting Team to revise the requirement to align with those functions' capabilities. Many registered entities may operate with smaller non-registered entities and end-user customers that are not obligated to provide such information to their utilities (e.g. rooftop solar PV resources). We propose revising the objective to read "references to LSE requirements will be reassigned to applicable functions and revised to align with those functions' capabilities." 2. An objective should be included to assess other requirements that could be deemed administrative or align with other Paragraph 81 criteria. Over the past two years, industry and the ERO Enterprise have identified these requirements through a standards grading evaluation conducted by Regional Entity and NERC Technical Committee representatives. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Michelle Amarantos - APS - Arizona Public Service Co. - 1,3,5,6 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>AZPS requests clarification to ensure that the directives to the SDT are clear and definitive. To eliminate ambiguity, AZPS recommends that the following sentence be revised as indicated below.</p> | |

“The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to:

1. Delete remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs);
2. Revise references to the Load-Serving Entity (LSEs) by replacing these references with:
 1. either the Distribution Provider (DP) or the Balancing Authority (BA);
 2. Distribution Provider; or
 3. Balancing Authority.”

In addition, AZPS requests clarification regarding how the determination will be made to replace LSEs with either DP or BA, DP, or BA. For example, will the SDT be required to establish criteria to determine if LSE is replaced with a DP, BA, Option for Either or None (removal)?

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

We agree with the need to review the alignment issue, but reserve judgment on the proposed changes to the affected standards.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Neil Swearingen - Salt River Project - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| SRP supports the objectives of Project 2017-07 as described in the SAR. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rick Applegate - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Julie Hall - Entergy - 6, Group Name Entergy/NERC Compliance | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Daniel Grinkevich - Con Ed - Consolidated Edison Co. of New York - 1,3,5,6 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Elizabeth Axson - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Shelby Wade - PPL - Louisville Gas and Electric Co. - 3,5,6 - SERC, Group Name Louisville Gas and Electric Company and Kentucky Utilities Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Sergio Banuelos - Tri-State G and T Association, Inc. - 1,3,5 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

2. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Summary Responses:

Based on comments received, the SAR Drafting Team has updated the language of the SAR, which now states, "remove or replace references to the Load-Serving Entity (LSEs) by either the Distribution Provider (DP), the Balancing Authority (BA), or other appropriate functional entity."

There were comments received stating concerns with the proposed change to the Applicability Section in PRC-005-6. The Draft 1 SAR proposed to replace DP with UFLS-only DPs, creating a possible conflict resulting in Section 4.1 with Section 4.2.1.

- The SAR Drafting Team agreed with the comments received and updated the language in the SAR by deleting "removing UFLS-only DP" and changing the language to "adding UFLS-only DP."

Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer

Document Name

Comment

1. The SAR type should include the retirement of a standard, as there is a possibility that all requirements of a standard could be retired as part of this project.
2. The unique characteristics of the BES facilities that may be impacted by this proposed standard development project should be identified as "None" instead of not applicable.
3. We believe two Reliability Principles are applicable to this standard development project. This project will revise requirements for applicable entities that plan and operate interconnected bulk power systems in a coordinated manner. Moreover, the project will revise requirements applicable to identifying information that is necessary for the planning and operation of interconnected bulk power systems and its availability for responsible entities.
4. We thank you for this opportunity to provide these comments.

Likes 0

Dislikes 0

Response

Thank you for your comments.

1. All of the proposed standards within the SAR have applicable entities in addition to the PSE, LSE and IA.
2. Change made
3. Updated in SAR

Sergio Banuelos - Tri-State G and T Association, Inc. - 1,3,5 - MRO,WECC

Answer

Document Name

Comment

Based on the proposed changes to the Applicability Section of PRC-005, Tri-State believes PRC-004 applicability should also be updated to replace Distribution Provider with UFLS-only DP. As currently written in the SAR, we believe the PRC-005 applicability would become inconsistent with the current version of PRC-004.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE is concerned with the proposed change to the Applicability section in Reliability Standard PRC-005-6. The SAR proposes to replace Distribution Provider (DP) with Underfrequency Load Shedding (UFLS)-only DPs. This could result in section 4.1 conflicting with section 4.2.1, which includes Protection Systems and Sudden Pressure Relaying that are installed for the purpose of detecting Faults on BES elements. This could include DPs that do not have UFLS.

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | |
| Document Name | |
| Comment | |
| <p>a) Functional category removal has the potential to impact the newly designated applicable entity for the standard. If applicable how will the impact be mitigated? Should this be taken into account as part of a revised implementation plan?</p> <p>b) Alignment category number 2 should include the currently existing, in progress, standards revision as part of the regional reliability standards revision driven by NPCC. Specifically NERC should coordinate with NPCC the revision of the standard PRC-006-NPCC-2 Automatic Underfrequency Load Shedding. For example Requirement Part 16.3 “Have compensatory load shedding, as provided by a Distribution Provider or Transmission Owner that is adequate to compensate for the loss of their generator due to early tripping.” should now be transferred to Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP). In other words the NERC revision of standards should be coordinated with the regional entities to avoid having conflicting regulatory requirements in effect at the same time (i.e. different owners for the same regulatory requirement)</p> <p>c) There is a potential risk for conflicting regulatory requirements due to different timelines for the Periodic Review of various standards.</p> <p>The SAR form should check an additional box in the “SAR Type” i.e. “Add, Modify or Retire a Glossary Term”. The terms Interchange Authority (IA), Load-Serving Entity (LSE) and Purchasing-Selling Entities are used in NERC Glossary definitions and the SAR or Standard drafting team should make sure that these definitions are still valid. For example, the NERC Glossary uses “Interchange Authority” in the definitions of Arranged Interchange, Confirmed Interchange, and Request for Interchange and these terms as well as the definition of “Interchange Authority” itself do not necessarily align with the project on the INT standards where the BA took on the IA’s reliability tasks. Also LSE is used in the definitions of Energy Emergency, Interruptible Load, DSM, etc.</p> | |

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>OPG is of the opinion that:</p> <ol style="list-style-type: none"> 1. Functional category removal has the potential to impact the newly designated applicable entity for the standard. If applicable how will the impact be mitigated? Should this be taken into account as part of a revised implementation plan? 2. Alignment category number 2 should include the currently existing, in progress, standards revision as part of the regional reliability standards revision driven by NPCC. Specifically NERC should coordinate with NPCC the revision of the standard PRC-006-NPCC-2 Automatic Underfrequency Load Shedding. For example Requirement Part 16.3 “Have compensatory load shedding, as provided by a Distribution Provider or Transmission Owner that is adequate to compensate for the loss of their generator due to early tripping.” should now be transferred to Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP). In other words the NERC revision of standards should be coordinated with the regional entities to avoid having conflicting regulatory requirements in effect at the same time (i.e. different owners for the same regulatory requirement) 3. There is a potential risk for conflicting regulatory requirements due to different timelines for the Periodic Review of various standards. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer

Document Name

Comment

The SPP Standards Review Group recommends that the drafting team review the definitions of the terms ‘Distribution Provider’ and ‘Balancing Authority’ in the NERC Glossary of Terms, RoP (Appendix 2) and the Functional Model. Through our observation, the definitions are properly aligned with only two of the three documents (The NERC Glossary of Terms and RoP) which can be reviewed in the definitions shown below.

DP (Glossary of Terms and RoP) - Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the distribution function at any voltage.

DP (Functional Model) - The functional entity that provides facilities that interconnect an End-use Customer load and the electric system for the transfer of electrical energy to the End-use Customer.

BA (Glossary of Terms and RoP) - The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.

BA (Functional Model) - The functional entity that integrates resource plans ahead of time, maintains generation-load-interchange-balance within a Balancing Authority Area, and contributes to Interconnection frequency in real time.

From our perspective, this doesn’t promote consistency in the NERC Documents. We recommend the drafting team develops a SAR to help initiate the proper alignment of the Functional Model with the other two NERC Documents since it’s referenced in the current SAR. However, if the drafting team feels that there is no need to align the Functional Model, we would recommend removing the use of the Functional Model from all NERC Documentation. At its current state, the document has the potential to cause confusion with the interpretation of other defined terms referenced in the two NERC Documents (Glossary of Terms and RoP).

Likes 0

Dislikes 0

Response

Shelby Wade - PPL - Louisville Gas and Electric Co. - 3,5,6 - SERC, Group Name Louisville Gas and Electric Company and Kentucky Utilities Company

Answer

Document Name

Comment

Within the Detailed Description section of the SAR, the clean-up effort of the standards are divided into three categories: **(1)** removal of the retired function and replacement by another function, **(2)** removal of the deregistered functional entities and their applicable requirements/references, and **(3)** initiatives that can address RBR updates through the periodic review process.

The second sentence of the Detailed Description states “The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be replaced by either the Distribution Provider (DP) or the Balancing Authority (BA).”

As currently written, the second sentence of the Detailed Description indicates removing and replacing references to the LSE with the DP as the only change that will be given consideration with respect to the LSE-related changes (Category 1 of the clean-up effort). It does not contemplate consideration of simply removing the applicable requirements with respect to and references to the LSE within relevant standards (Category 2 of the clean-up effort). To correct this misalignment or potential conflict within the Detailed Description, we recommend that the second sentence of the Detailed Description be revised to state:

“The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the applicable requirements with respect to and references to Purchasing-Selling Entities (PSEs), Interchange Authorities (IAs), and Load Serving Entities (LSEs) and their applicable requirements/references; or with respect to LSEs, remove the applicable requirements with respect to and replace the references to the LSE with either the Distribution Provider (DP) or the Balancing Authority (BA) or another functional role if appropriate.”

Additionally, we believe there is value in finalizing needed updates to the NERC Functional Model and the Functional Model Technical Document as posted to and commented upon by the industry in September 2016 prior to approving this SAR. Those documents are a useful

guide in understanding the proper scope of the functional roles and how the elimination of certain functional categories can be addressed in the relevant reliability standards.

Likes 0

Dislikes 0

Response

Michael Jones - National Grid USA - 1,3,5

Answer

Document Name

Comment

Should PRC-005 be applicable to Distribution Providers and the sub-set UFLS-only DP? For PRC-005, it may not be appropriate to replace Distribution Providers with the more limiting "UFLS-only DP" applicability.

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

None

| | |
|-----------------|--|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

Standard Authorization Request (SAR) Form

Complete and please email this form, with attachment(s) to: sarcomm@nerc.net

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|---|---|---|---|
| SAR Title: | Standards Alignment with Registration | | |
| Date Submitted: | | | |
| SAR Requester | | | |
| Name: | Revised by Project 2017-07 Standards Alignment with Registration SAR Drafting Team Stephen Wendling, Chair | | |
| Organization: | American Transmission Company | | |
| Telephone: | (608) 877-8232 | Email: | swendling@atcllc.com |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> New Standard | <input type="checkbox"/> Imminent Action/ Confidential Issue (SPM Section 10) | <input type="checkbox"/> Variance development or revision | <input type="checkbox"/> Other (Please specify) |
| <input checked="" type="checkbox"/> Revision to Existing Standard Add, Modify or Retire a Glossary Term | | | |
| <input type="checkbox"/> Withdraw/retire an Existing Standard | | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input checked="" type="checkbox"/> Regulatory Initiation | <input type="checkbox"/> NERC Standing Committee Identified | <input type="checkbox"/> Enhanced Periodic Review Initiated | <input checked="" type="checkbox"/> Industry Stakeholder Identified |
| <input type="checkbox"/> Emerging Risk (Reliability Issues Steering Committee) Identified | | | |
| <input type="checkbox"/> Reliability Standard Development Plan | | | |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| This project will align the Reliability Standards with the outcome of the Risk-Based Registration (RBR) initiative. | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| This project would modify Reliability Standards to be consistent with the FERC-approved changes to registration as part of the RBR initiative. | | | |
| Project Scope (Define the parameters of the proposed project): | | | |
| This project will review and align Reliability Standards impacted by the RBR initiative. | | | |
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g. research paper) to guide development of the Standard or definition): | | | |
| This project will formally address any remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities | | | |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

Requested information

(PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be removed or replaced by either the Distribution Provider (DP), the Balancing Authority (BA), or the appropriate applicable entity. Additionally, the project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section of PRC-005 and PRC-006; and review the Applicability sections of PRC-004 and PRC-008 and revise, as appropriate, to add UFLS-only DPs.

The clean-up effort of the standards can be categorized into the following:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. For instance, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. The impacted standards include the BAL, CIP, IRO, and TOP family of standards. Additionally PRC-005-1.1b and PRC-006-003 will be updated to add UFLS-only DP to the Applicability Sections and a review of the Applicability Sections of PRC-004-5(i) and PRC-008-0 to add, as appropriate, UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004-3.1 and NUC-001-3 standards. Rather than the Project 2017-07 making the revisions the SDT could coordinate with the periodic review teams currently reviewing INT-004-3.1 and NUC-001-3 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project):

No additional costs outside of the time and resources needed to serve on the SAR and Standard Drafting Team.

Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (*e.g.* Dispersed Generation Resources):

None

To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (*e.g.* Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions):

Since LSE is being removed or replaced by either the Distribution Provider (DP), the Balancing Authority (BA), or the appropriate Applicable Entity for the standards that need to be updated, those entities will likely be best suited for the MOD and PRC updates.

| Requested information |
|--|
| Do you know of any consensus building activities ² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity. |
| None |
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so which standard(s) or project number(s)? |
| None |
| Are there alternatives (e.g. guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. |

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input checked="" type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|--|-------------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to | Yes |

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

Market Interface Principles

access commercially non-sensitive information that is required for compliance with reliability standards.

Identified Existing or Potential Regional or Interconnection Variances

| Region(s)/ Interconnection | Explanation |
|-------------------------------|--|
| NPCC and SERC | UFLS-only DP will be added to the Applicability Section of PRC-006 and will create a variance of the following two Regional Standards: PRC-006-NPCC-1 PRC-006-SERC-01 PRC-006-SERC-02 |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate) | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff <input type="checkbox"/> Draft SAR presented to SC for acceptance <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> Final SAR endorsed by the SC <input type="checkbox"/> SAR assigned a Standards Project by NERC <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-----------------|-----------------------------|------------------|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January X, 2017 | Standards Information Staff | Revised |

Standard Authorization Request (SAR) Form

Complete and please email this form, with attachment(s) to: sarcomm@nerc.net

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | |
|---|---|
| SAR Title: | Standards Alignment with Registration |
| Date Submitted: | |
| SAR Requester | |
| Name: | NERC Standards Staff Revised by Project 2017-07 Standards Alignment with Registration SAR Drafting Team Stephen Wendling, Chair |
| Organization: | NERC American Transmission Company |
| Telephone: | (608) 877-8232 |
| Email: | swendling@atcllc.com |
| SAR Type (Check as many as apply) | |
| <input type="checkbox"/> New Standard <input checked="" type="checkbox"/> Revision to Existing Standard <input type="checkbox"/> Add, Modify or Retire a Glossary Term <input type="checkbox"/> Withdraw/retire an Existing Standard | <input type="checkbox"/> Imminent Action/ Confidential Issue (SPM Section 10) <input type="checkbox"/> Variance development or revision <input type="checkbox"/> Other (Please specify) |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | |
| <input checked="" type="checkbox"/> Regulatory Initiation <input type="checkbox"/> Emerging Risk (Reliability Issues Steering Committee) Identified <input type="checkbox"/> Reliability Standard Development Plan | <input type="checkbox"/> NERC Standing Committee Identified <input type="checkbox"/> Enhanced Periodic Review Initiated <input checked="" type="checkbox"/> Industry Stakeholder Identified |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | |
| This project will align the Reliability Standards that are impacted by with the outcome of the Risk-Based Registration (RBR) initiative. | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | |
| This project aligns would modify Reliability Standards to be consistent with the FERC-approved changes to registration as part of the RBR initiative. | |
| Project Scope (Define the parameters of the proposed project): | |
| This project will review and align Reliability standards Standards impacted by the RBR initiative. | |
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g. research paper) to guide development of the Standard or definition): | |
| This project will formally address any remaining edits to the Reliability standards Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the BAL, | |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

Requested information

CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be removed or replaced by either the Distribution Provider (DP), ~~or~~ the Balancing Authority (BA), or the appropriate applicable entity. Additionally, the project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section of PRC-005 and PRC-006; and review the Applicability sections of PRC-004 PRC-005 and PRC-008 will replace and revise, as appropriate, to add UFLS-only DPs.~~the distribution provider with the Underfrequency Load Shedding (UFLS)-only DPs.~~

The clean-up effort of the standards can be categorized into the following:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, For instance, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward. ~~A SAR has been submitted to modify the MOD standards, and it would be posted with the Alignment with Registration SAR.~~
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. The impacted standards include the BAL, CIP, IRO, and TOP family of standards. Additionally PRC-005-1.1b and PRC-006-003 will be updated to replace-add distribution providers with the more limited-UFLS-only DP to the Applicability Sections and a review of the Applicability Sections of PRC-004-5(i) and PRC-008-0 to add, as appropriate, UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004-3.1 and NUC-001-3 standards. ~~In other words, rather than the Project 2017-07 making the revisions immediately, this~~ the SDT could coordinate with information would be provided to the periodic review teams currently reviewing INT-004-3.1 and NUC-001-3 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project):

No additional costs outside of the time and resources needed to serve on the SAR and ~~SC Standard Drafting Team~~.

Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g. Dispersed Generation Resources):

~~NA~~ None

To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g. Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions):

| Requested information |
|---|
| Since LSE is being <u>removed or</u> replaced by either a <u>the</u> Distribution Provider <u>(DP)</u> , or <u>the</u> Balancing Authority <u>(BA)</u> , <u>or the appropriate Applicable Entity</u> for the standards that need to be updated, those entities will like <u>likely</u> be best suited for the MOD and PRC updates. |
| Do you know of any consensus building activities ² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity. |
| NA <u>None</u> |
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so which standard(s) or project number(s)? |
| A separate SAR on the MOD standards was recently received that would be addressed by this project. <u>None</u> |
| Are there alternatives (e.g. guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. |

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input checked="" type="checkbox"/> <input type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> <input type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|---|----------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Market Interface Principles | |
|--|-----|
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | Yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|--|---|
| Region(s)/ Interconnection | Explanation |
| e.g. NPCC and SERC | <p><u>UFLS-only DP will be added to the Applicability Section of PRC-006 and will create a variance of the following two Regional Standards:</u></p> <p><u>PRC-006-NPCC-1</u></p> <p><u>PRC-006-SERC-01</u></p> <p><u>PRC-006-SERC-02</u></p> |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate) | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff <input type="checkbox"/> Draft SAR presented to SC for acceptance <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> Final SAR endorsed by the SC <input type="checkbox"/> SAR assigned a Standards Project by NERC <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-----------------|-----------------------------|------------------|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January X, 2017 | Standards Information Staff | Revised |

Unofficial Comment Form

Project 2017-07 Standards Alignment with Registration

Do not use this form for submitting comments. Use the [electronic form](#) to submit comments on **Project 2017-07 Standards Alignment with Registration**. The electronic form must be submitted by **8 p.m. Eastern, Tuesday, January 9, 2018**.

Additional information is available on the [project page](#). If you have questions, contact Standards Developer, [Laura Anderson](#) (via email), or at 404-446-9671.

Background Information

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) Initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system.

FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria. Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration is focused on making the tailored Reliability Standards updates necessary to reflect the retirement of PSEs, IAs, and LSEs (as well as all of their applicable references). This alignment includes three categories:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. Additionally PRC-005 will be updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004 and NUC-001 standards. In other words, rather than making the revisions immediately, this information would be provided to the periodic review teams currently reviewing

INT-004 and NUC-001 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Questions

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, **provide specific language revisions that would make it acceptable to you.**

- Yes
 No

Comments:

2. The SAR Drafting Team has merged the Project 2017-07 Standards Alignment with Registration SAR and the MOD-032-1 SAR into a single SAR for this project. Do you agree with the merging of the two SARs into a single SAR for Project 2017-07? If not, please explain why you do not agree and, if possible, **provide specific language revisions that would make it acceptable to you.**

- Yes
 No

Comments:

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Comments:

Standards Announcement

Project 2017-07 Standards Alignment with Registration Standards Authorization Request

Formal Comment Period Open through January 9, 2018

[Now Available](#)

An additional 30-day formal comment period on the Standards Authorization Request (SAR) for Standards Alignment with Registration is open through **8 p.m. Eastern, Tuesday, January 9, 2018.**

Commenting

Use the [Standards Balloting and Commenting System](#) (SBS) to submit comments on the SAR. If you experience any difficulties using the electronic form, contact [Nasheema Santos](#). The unofficial Word version of the comment form is posted on the [project page](#).

- *If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The drafting team will review all responses received during the comment period and determine the next steps of the project.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446-9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower

Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2017-07 Standards Alignment with Registration | Standards Authorization Request
Comment Period Start Date: 12/11/2017
Comment Period End Date: 1/9/2018
Associated Ballots:

There were 16 sets of responses, including comments from approximately 67 different people from approximately 51 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

- 1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.**
- 2. The SAR Drafting Team has merged the Project 2017-07 Standards Alignment with Registration SAR and the MOD-032-1 SAR into a single SAR for this project. Do you agree with the merging of the two SARs into a single SAR for Project 2017-07? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.**
- 3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:**

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|----------------------------------|-----------------|------------|---------------------|------------------------------|-------------------|--|-------------------------|---------------------|
| Southwest Power Pool, Inc. (RTO) | Charles Yeung | 2 | SPP RE | SRC | Charles Yeung | SPP | 2 | SPP RE |
| | | | | | Ben Li | IESO | 2 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Lori Spence | MISO | 2 | MRO |
| | | | | | Mark Holman | PJM | 2 | RF |
| | | | | | Matt Goldberg | ISONE | 1 | NPCC |
| Duke Energy | Colby Bellville | 1,3,5,6 | FRCC,RF,SERC | Duke Energy | Doug Hills | Duke Energy | 1 | RF |
| | | | | | Lee Schuster | Duke Energy | 3 | FRCC |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| ACES Power Marketing | Jodirah Green | 6 | NA - Not Applicable | ACES Standard Collaborations | Shari Heino | Brazos Electric Power Cooperative, Inc. | 5 | Texas RE |
| | | | | | Greg Froehling | Rayburn Country Electric Cooperative, Inc. | 6 | Texas RE |
| | | | | | John Shaver | Arizona Electric Power Cooperative, Inc. | 1 | WECC |
| | | | | | Paul Mehlhaff | Sunflower Electric Power Corporation | 1 | SPP RE |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Susan Sosbe | Wabash Valley Power Association | 3 | RF |
| Entergy | Julie Hall | 5,6 | | Entergy | Oliver Burke | Entergy - Entergy Services, Inc. | 1 | SERC |
| | | | | | Jamie Prater | Entergy | 5 | SERC |

| | | | | | | | | |
|--|---------------|----------------------|------|----------------------------|-------------------|--|----|------|
| Southern Company - Southern Company Services, Inc. | Marsha Morgan | 1,3,5,6 | SERC | Southern Company | Katherine Prewitt | Southern Company Services, Inc | 1 | SERC |
| | | | | | Jennifer Sykes | Southern Company Generation and Energy Marketing | 6 | SERC |
| | | | | | R Scott Moore | Alabama Power Company | 3 | SERC |
| | | | | | William Shultz | Southern Company Generation | 5 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC no Dominion and ISO-NE | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Wayne Sipperly | New York Power Authority | 4 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| | | | | | Bruce Metruck | New York Power Authority | 6 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |
| | | | | | Edward Bedder | Orange & Rockland Utilities | 1 | NPCC |
| | | | | | David Burke | Orange & Rockland Utilities | 3 | NPCC |
| | | | | | Michele Tondalo | UI | 1 | NPCC |
| | | | | | Laura Mcleod | NB Power | 1 | NPCC |
| | | | | | David Ramkalawan | Ontario Power Generation Inc. | 5 | NPCC |

| | | | | | | | | |
|----------------------------------|-----------------|---|--------|----------------------------|-------------------|--|---------|--------|
| | | | | | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Michael Schiavone | National Grid | 1 | NPCC |
| | | | | | Michael Jones | National Grid | 3 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Sylvain Clermont | Hydro Quebec | 1 | NPCC |
| | | | | | Chantal Mazza | Hydro Quebec | 2 | NPCC |
| | | | | | Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| | | | | | Michael Forte | Con Ed - Consolidated Edison | 1 | NPCC |
| | | | | | Daniel Grinkevich | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| | | | | | Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| | | | | | Brian O'Boyle | Con Ed - Consolidated Edison | 5 | NPCC |
| | | | | | Sean Cavote | PSEG | 4 | NPCC |
| Southwest Power Pool, Inc. (RTO) | Shannon Mickens | 2 | SPP RE | SPP Standards Review Group | Shannon Mickens | Southwest Power Pool Inc. | 2 | SPP RE |
| | | | | | Jeff McDiarmid | Southwest Powr Pool Inc. | 2 | SPP RE |
| | | | | | Louis Guidry | Cleco Corporation | 1,3,5,6 | SPP RE |
| | | | | | Tara Lightner | Sunflower Electric Power Corporation | 1 | SPP RE |

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer No

Document Name

Comment

The SRC understands the scope and objectives for this project. However, we seek more explanation to why this project needs to be moved forward at this juncture given the Standards Efficiency Review (SER) which is intended to be a whole-sale look at the Standards. The changes in Project 2017-07 appear to have little impact on the state of reliability. We understand the deregistration of the LSE is prompting these changes, but the processes that this SAR will change do not seem to be gravely impacted by that deregistration. Although the NERC standards that have been assigned to the LSE were to ensure certain data and information are provided to reliability related processes in MOD-032, NERC should provide more evidence that there was a problem in obtaining the information when the deregistration occurred.

Additionally, with some of the activity occurring regarding distributed energy resources and their impact on the BES, we believe it's time to pause and be sure we are able to get necessary data from DPs.

We suggest this project be put on hold pending the initial phase of the SER project which may better inform the scope of this proposal noting that this project is a Low Priority in the 2018 RSDP.

Further, INT- 004 PSE requirements have already been allocated to the North American Energy Standards Board (NAESB) and filed with FERC as NAESB Business Practice Standards. This already removed the responsibility for INT standards out of NERC into NAESB – so what is the risk to reliability if the INT-004 requirements no longer have obligations on the PSE?

(note – Although IESO signs onto the overall consensus IRC comments, IESO does not support the comments in response to Question #1)

Likes 0

Dislikes 0

Response

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer No

Document Name

Comment

ERCOT agrees that the NERC Reliability Standards should be revised to remove references to functional entities that are no longer subject to registration with NERC and to modify requirements to reallocate duties formerly assigned to these retired functions. However, ERCOT recommends that all revisions—including those that could be addressed through later periodic review (i.e., the third category identified in the SAR)—be addressed as part of this project. There are no efficiencies to be gained by leaving these issues for a future project, and this would only delay the needed clarifications.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer

Yes

Document Name

Comment

We agree with the need to review the alignment issue, but reserve judgment on the proposed changes to the affected standards.

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standard Collaborations

Answer

Yes

Document Name

Comment

Yes, there is agreement with the proposed scope and objectives for Project 2017-07 described in the SAR. Since the functional categories have been removed, updating all impacted standards is required to provide clarity to Registered Entities and Regional Entities.

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 3,5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrew Gallo - Austin Energy - 1,3,4,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 1,3,4,5 - RF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ozan Ferrin - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Julie Hall - Entergy - 5,6, Group Name Entergy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Ramkalawan - Ontario Power Generation Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no Dominion and ISO-NE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Marsha Morgan - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| <p>Texas RE appreciates the project to align the Reliability Standards with the Risk-Based Registration initiative. Texas RE agrees with adding Underfrequency Load Shedding (UFLS) – only DPs to the applicability section of certain standards. Texas RE recommends the SAR drafting team also review the requirements of those standards to determine whether UFLS-only DPs should be added to the requirement language of those standards to ensure there are no reliability gaps.</p> <p>Additionally, Texas RE suggests the SAR drafting team consider adding UFLS-only DPs to the applicability and requirement section of the following standards:</p> <ul style="list-style-type: none"> · EOP-004 – Add UFLS-only DPs as an entity with Reporting Responsibility in Attachment 1 to the following Event Types: <ul style="list-style-type: none"> o Automatic firm load shedding &ge; 100 MW (via automatic undervoltage or underfrequency load shedding schemes, or RAS) – If the event occurred, a UFLS-only DP should be expected to have reporting responsibility. o Damage or destruction of a Facility - UFLS DPs should have reporting responsibilities since one of the last lines of reliability defense is underfrequency relaying entities. · FAC-002 - FAC-002 needs to include UFLS-only DPs in the applicability section so new or materially-modified existing Facilities are coordinated and studied appropriately. If FAC-002 does not include UFLS-only DPs, the UFLS-only DP may not coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator in accordance with FAC-002-2 Requirement R3. · IRO-010 – If the UFLS-only DPs are not included, they may not provide data to its Reliability Coordinator in accordance with Requirement R3. This standard should include UFLS-only DP entities so that an RC can fully understand post-contingent projected system conditions (i.e. OPA and RTA) that may recognize a possible underfrequency event and corresponding reaction to said event. If the RC does not have the UFLS information available that analyses will be incomplete. The same issue applies to TOP-003. · COM-002 – If UFLS-only DP is not added to the applicability, that entity may not do the training required by COM-002-4 Requirement R3 or three part communication as required by COM-002-4 Requirement R6. A UFLS-only DP may receive Operating Instructions to coordinate the re-energization of underfrequency relay equipped load. That would indicate the need for proper communications between the appropriate parties. Furthermore, during a Blackstart scenario the UFLS-only DP may be required to not re-energize load (through an Operating Instruction) to help coordinate the stabilization of the grid during restoration. <p>Texas RE suggests modifying the SAR language to include these additional standards: <i>“Additionally, the project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section and to the applicable Requirement language of COM-002, EOP-004, FAC-002, IRO-010, TOP-003, PRC-005, PRC-006 and other standards noted during this project. The project will also include reviewing and revising adding UFLS-only DP as appropriate to the Applicability Sections and Requirement language for PRC-004 and PRC-008 and any other Standard to which this issue may apply.”</i></p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

2. The SAR Drafting Team has merged the Project 2017-07 Standards Alignment with Registration SAR and the MOD-032-1 SAR into a single SAR for this project. Do you agree with the merging of the two SARs into a single SAR for Project 2017-07? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Jodirah Green - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standard Collaborations

Answer Yes

Document Name

Comment

Yes, there is agreement with merging Project 2017-17 Standards Alignment with Registration and MOD-032-1 SARs. The removal of Load Serving Entities (LSE) in the MOD-032-1 standard updates are in alignment with the removal of Purchasing-Selling Entity (PSE) and Interchange Authority (IA) that requires minor revisions to their respected impacted standards to align with the post Risk Based Registration (RBR) impacts.

Likes 0

Dislikes 0

Response

Marsha Morgan - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no Dominion and ISO-NE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Ramkalawan - Ontario Power Generation Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Julie Hall - Entergy - 5,6, Group Name Entergy

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ozan Ferrin - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 1,3,4,5 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Andrew Gallo - Austin Energy - 1,3,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Thomas Foltz - AEP - 3,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer

Document Name

Comment

SRC has no opinion for this question

Likes 0

Dislikes 0

Response

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 1,3,4,5 - RF

Answer

Document Name

Comment

No comments.

Likes 0

Dislikes 0

Response

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer

Document Name

Comment

The IRC SRC asks whether this SAR is timely and whether there is truly a reliability gap if the changes are not made. We want to ensure that industry resources are made available to address the most critical reliability issues first. Now that NERC has begun a SER of all NERC standards on an expedited schedule, a wholesale re-look at all the standards; is it the best use of industry resources to begin another project that intends to open up the same standards to the standards development process that may also be subject to revisions through the SER process?

As a matter of efficiency, since the NERC Standards Process potentially opens up a standard to changes that were not contemplated in the SAR and can potentially extend the expected timelines to completion, should NERC explore alternative processes to reach industry consensus on projects such as this which are intended to complement already accepted changes by the industry (de-register LSEs)?

Likes 0

Dislikes 0

Response

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer

Document Name

Comment

1. In the Detailed Description section, “appropriate applicable entity” should be clarified to indicate that only NERC-registered entities will be potentially reassigned applicability.
2. Adding PRC-008-0 to the scope of this SAR is irrelevant as this Standard is governed by and was combined with PRC-005-2/PRC-005-6 effective 4/1/2015 and will be retired when the full Implementation Plan of PRC-005-6 is complete. (From IP: *Standards PRC-005 - 1.1b, PRC-008-0, PRC- 011- 0, and PRC- 017- 0 shall remain enforceable throughout the phased implementation period set forth in the PRC- 005 -2(i) implementation plan, incorporated herein by reference, and shall be applicable to a registered entity’s Protection System Component maintenance activities not yet transitioned to PRC-005- 2(i) or its combined successor standards. Standards PRC- 005- 1.1b, PRC- 008-0, PRC-011- 0, and PRC- 017- 0 shall be retired at midnight of March 31, 2027 or as otherwise made effective pursuant to the laws applicable to such Electric Reliability Organization (ERO) governmental authorities; or, in those jurisdictions where no regulatory approval is required, at midnight of March 31, 2027.*).
3. Adding PRC-004-5(i) to the scope of this SAR is irrelevant as UFLS-only DP’s do not typically own BES interrupting devices that would operate and therefore would not be obligated by this Standard’s Requirements R1 and R2. A UFLS-only DP who does own BES interrupting devices would be additionally registered as a Transmission Owner (TO) as an owner of BES Elements and therefore this functional registration would obligate the Standard’s applicability. Additionally, for a DP who owns a portion of a Composite Protection System, and would possibly be notified by another entity of a BES interrupting device operation per Requirement R3, would be additionally registered as a UFLS-only DP per the NERC Rules of Procedure, Appendix 5B: Registration Criteria for DP (*A DP - Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the distribution function at any voltage. Note: As provided in Section III.b.1 and Note 5 below, a Distribution Provider entity shall be an Underfrequency Load Shedding (UFLS)-Only Distribution Provider if it is the responsible entity that owns, controls or operates UFLS Protection System(s) needed to implement a required UFLS program designed for the protection of the BES, but does not meet any of the other registration criteria for a Distribution Provider.*)
4. A definition for Underfrequency Load Shedding (UFLS) should be added to the Glossary of Terms to add clarity to the meaning of this term. Note that Undervoltage Load Shedding (UVLS) is currently in the Glossary of Terms (most recent definition effective 4/1/2017) but UFLS is not. FERC NOPR under Docket No. RM11-20-000; October 20, 2011 provides a reference to the 2003 Blackout Report (*U.S.-Canada Power System Outage Task Force, Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations at 92-93 (2004) (Blackout Report).*) and an “explanation” of UFLS which could be used as a reference for developing a definition (*[A]utomatic under-frequency load-shedding (UFLS) is designed for use in extreme conditions to stabilize the balance between generation and load after an electrical island has been formed, dropping enough load to allow frequency to stabilize within the island. All synchronous generators in North America are designed to operate at 60 cycles per second (Hertz) and frequency reflects how well load and generation are balanced—if there is more load than generation at any moment, frequency drops below 60 Hz, and it rises above that level if there is more generation than load. By dropping load to match available generation within the island, UFLS is a safety net that helps to prevent the complete blackout of the island, which allows faster system restoration afterward. UFLS is not effective if there is electrical instability or voltage collapse within the island.*)

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standard Collaborations

Answer

Document Name

Comment

Thank you for the opportunity to provide comments.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE dos not have additional comments.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no Dominion and ISO-NE

Answer

Document Name

Comment

It would be helpful if the SAR contained the list of standards that are affected by the proposed changes.

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer

Document Name

Comment

The SPP Standards Review Group (“SSRG”) generally supports the proposed scope and objectives for Project 2017-07 but reserves the right to provide additional comments once the standards drafting team issues draft revised standards for industry review.

At this time, the SPPRG would recommend the standards drafting team consider two generalized comments when drafting the initial revised standards:

Regarding MOD-32-1, SPP continues to review the SAR's proposal to replace "Load Serving Entity" with either a Distribution Provider, Balancing Authority, or other "other applicable entity." The SSRG understands "other applicable entity" to mean an applicable NERC Registered Entity, and this interpretation appears to be consistent with the SAR's categorization that "certain data from LSEs may need to be provided by other *functional entities* going forward (emphasis added)." The standards drafting team must ensure that the NERC Registered Entity ultimately determined to be the appropriate replacement for Load Serving Entity will be able to meet the current data reporting requirements identified in Attachment 1 of MOD-32-1. To that end, the standard drafting team must also ensure the Planning Coordinator or Transmission Planner's obligations will not be unreasonably impacted by the replacement of the Load Serving Entity function.

Regarding proposed changes to PRC-005 and PRC-006 to add Underfrequency Load Shedding (UFLS)-only DP to the applicability section of the standard(s), the SPPRG would recommend that the standards drafting team leverage pre-established language from existing standards, as appropriate, when updating PRC-005 and PRC-006. For example, the language in current PRC-004-5(i) at Section 4.2.2 provides the description "[u]nderfrequency load shedding (UFLS) that is intended to trip one or more BES elements" to clarify which sub-set of Distribution Provider facilities are included in the standard. Such language could be utilized in Sections 4 of PRC-005 and PRC-006 to clarify the applicability to the UFLS-only DP. In other words, the goal of updating PRC-005 and PRC-006 may be accomplished by utilizing current approved language related to the UFLS-only DP from other standards where appropriate.

| | |
|-----------------|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |

Consideration of Comments

Project Name: 2017-07 Standards Alignment with Registration | Standards Authorization Request

Comment Period Start Date: 12/11/2017

Comment Period End Date: 1/9/2018

Associated Ballots:

There were 16 sets of responses, including comments from approximately 67 different people from approximately 51 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Senior Director of Standards and Education, [Howard Gugel](#) (via email) or at (404) 446-9693.

Questions

- 1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.**
- 2. The SAR Drafting Team has merged the Project 2017-07 Standards Alignment with Registration SAR and the MOD-032-1 SAR into a single SAR for this project. Do you agree with the merging of the two SARs into a single SAR for Project 2017-07? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.**
- 3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:**

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|----------------------------------|-----------------|------------|---------------------|------------------------------|-------------------|--|-------------------------|---------------------|
| Southwest Power Pool, Inc. (RTO) | Charles Yeung | 2 | SPP RE | SRC | Charles Yeung | SPP | 2 | SPP RE |
| | | | | | Ben Li | IESO | 2 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Lori Spence | MISO | 2 | MRO |
| | | | | | Mark Holman | PJM | 2 | RF |
| | | | | | Matt Goldberg | ISONE | 1 | NPCC |
| Duke Energy | Colby Bellville | 1,3,5,6 | FRCC,RF,SERC | Duke Energy | Doug Hils | Duke Energy | 1 | RF |
| | | | | | Lee Schuster | Duke Energy | 3 | FRCC |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| ACES Power Marketing | Jodirah Green | 6 | NA - Not Applicable | ACES Standard Collaborations | Shari Heino | Brazos Electric Power Cooperative, Inc. | 5 | Texas RE |
| | | | | | Greg Froehling | Rayburn Country Electric Cooperative, Inc. | 6 | Texas RE |

| | | | | | | | | |
|--|---------------|---------|------|------------------|-------------------|--|---|--------|
| | | | | | John Shaver | Arizona Electric Power Cooperative, Inc. | 1 | WECC |
| | | | | | Paul Mehlhaff | Sunflower Electric Power Corporation | 1 | SPP RE |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Susan Sosbe | Wabash Valley Power Association | 3 | RF |
| Entergy | Julie Hall | 5,6 | | Entergy | Oliver Burke | Entergy - Entergy Services, Inc. | 1 | SERC |
| | | | | | Jamie Prater | Entergy | 5 | SERC |
| Southern Company - Southern Company Services, Inc. | Marsha Morgan | 1,3,5,6 | SERC | Southern Company | Katherine Prewitt | Southern Company Services, Inc | 1 | SERC |
| | | | | | Jennifer Sykes | Southern Company Generation and Energy Marketing | 6 | SERC |

| | | | | | | | | |
|--------------------------------------|-----------|----------------------|------|----------------------------|-----------------|--------------------------------------|----|------|
| | | | | | R Scott Moore | Alabama Power Company | 3 | SERC |
| | | | | | William Shultz | Southern Company Generation | 5 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC no Dominion and ISO-NE | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Wayne Sipperly | New York Power Authority | 4 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| | | | | | Bruce Metruck | New York Power Authority | 6 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |

| | | | |
|-------------------|-------------------------------|---|------|
| Edward Bedder | Orange & Rockland Utilities | 1 | NPCC |
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Michele Tondalo | UI | 1 | NPCC |
| Laura Mcleod | NB Power | 1 | NPCC |
| David Ramkalawan | Ontario Power Generation Inc. | 5 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| Helen Lainis | IESO | 2 | NPCC |
| Michael Schiavone | National Grid | 1 | NPCC |
| Michael Jones | National Grid | 3 | NPCC |
| Greg Campoli | NYISO | 2 | NPCC |
| Sylvain Clermont | Hydro Quebec | 1 | NPCC |

| | | | | | | | | |
|----------------------------------|-----------------|---|--------|----------------------------|-------------------|--|---|--------|
| | | | | | Chantal Mazza | Hydro Quebec | 2 | NPCC |
| | | | | | Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| | | | | | Michael Forte | Con Ed - Consolidated Edison | 1 | NPCC |
| | | | | | Daniel Grinkevich | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| | | | | | Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| | | | | | Brian O'Boyle | Con Ed - Consolidated Edison | 5 | NPCC |
| | | | | | Sean Cavote | PSEG | 4 | NPCC |
| Southwest Power Pool, Inc. (RTO) | Shannon Mickens | 2 | SPP RE | SPP Standards Review Group | Shannon Mickens | Southwest Power Pool Inc. | 2 | SPP RE |
| | | | | | Jeff McDiarmid | Southwest Powr Pool Inc. | 2 | SPP RE |

| | | | | | | | | |
|--|--|--|--|--|---------------|--------------------------------------|---------|--------|
| | | | | | Louis Guidry | Cleco Corporation | 1,3,5,6 | SPP RE |
| | | | | | Tara Lightner | Sunflower Electric Power Corporation | 1 | SPP RE |

1. Do you agree with the proposed scope and objectives for Project 2017-07 described in the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer No

Document Name

Comment

The SRC understands the scope and objectives for this project. However, we seek more explanation to why this project needs to be moved forward at this juncture given the Standards Efficiency Review (SER) which is intended to be a whole-sale look at the Standards. The changes in Project 2017-07 appear to have little impact on the state of reliability. We understand the deregistration of the LSE is prompting these changes, but the processes that this SAR will change do not seem to be gravely impacted by that deregistration. Although the NERC standards that have been assigned to the LSE were to ensure certain data and information are provided to reliability related processes in MOD-032, NERC should provide more evidence that there was a problem in obtaining the information when the deregistration occurred.

Additionally, with some of the activity occurring regarding distributed energy resources and their impact on the BES, we believe it's time to pause and be sure we are able to get necessary data from DPs.

We suggest this project be put on hold pending the initial phase of the SER project which may better inform the scope of this proposal noting that this project is a Low Priority in the 2018 RSDP.

Further, INT- 004 PSE requirements have already been allocated to the North American Energy Standards Board (NAESB) and filed with FERC as NAESB Business Practice Standards. This already removed the responsibility for INT standards out of NERC into NAESB – so what is the risk to reliability if the INT-004 requirements no longer have obligations on the PSE?

(note – Although IESO signs onto the overall consensus IRC comments, IESO does not support the comments in response to Question #1)

Likes 0

Dislikes 0

Response

Thank you for your comments. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes.

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

ERCOT agrees that the NERC Reliability Standards should be revised to remove references to functional entities that are no longer subject to registration with NERC and to modify requirements to reallocate duties formerly assigned to these retired functions. However, ERCOT recommends that all revisions—including those that could be addressed through later periodic review (i.e., the third category identified in the SAR)—be addressed as part of this project. There are no efficiencies to be gained by leaving these issues for a future project, and this would only delay the needed clarifications.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comments. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes. The future drafting team for this project will review and determine if revisions falling within Category Number 3 in the Detailed Description Section of the draft SAR are made more efficiently within the periodic reviews or by the Standards Alignment with Registration drafting team. The SAR Drafting Team has been involved in collaborative efforts with the current INT Review Team, as well as the current NUC Review Team. It is anticipated that both periodic review efforts will have completed prior to commencement of the future drafting of the Standards Alignment with Registration drafting effort, and the final recommendations from the periodic reviews will help the future Drafting Team determine the proper course to take in revisions to the INT and NUC standards.

Leonard Kula - Independent Electricity System Operator - 2

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|--|-----|
| Document Name | |
| Comment | |
| We agree with the need to review the alignment issue, but reserve judgment on the proposed changes to the affected standards. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |
| Jodirah Green - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standard Collaborations | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Yes, there is agreement with the proposed scope and objectives for Project 2017-07 described in the SAR. Since the functional categories have been removed, updating all impacted standards is required to provide clarity to Registered Entities and Regional Entities. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |
| Thomas Foltz - AEP - 3,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Andrew Gallo - Austin Energy - 1,3,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 1,3,4,5 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ozan Ferrin - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Julie Hall - Entergy - 5,6, Group Name Entergy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| | |
| Brian Evans-Mongeon - Utility Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no Dominion and ISO-NE | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Marsha Morgan - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE appreciates the project to align the Reliability Standards with the Risk-Based Registration initiative. Texas RE agrees with adding Underfrequency Load Shedding (UFLS) – only DPs to the applicability section of certain standards. Texas RE recommends the SAR drafting team also review the requirements of those standards to determine whether UFLS-only DPs should be added to the requirement language of those standards to ensure there are no reliability gaps.

Additionally, Texas RE suggests the SAR drafting team consider adding UFLS-only DPs to the applicability and requirement section of the following standards:

- EOP-004 – Add UFLS-only DPs as an entity with Reporting Responsibility in Attachment 1 to the following Event Types:
 - o Automatic firm load shedding ≥ 100 MW (via automatic undervoltage or underfrequency load shedding schemes, or RAS) – If the event occurred, a UFLS-only DP should be expected to have reporting responsibility.
 - o Damage or destruction of a Facility - UFLS DPs should have reporting responsibilities since one of the last lines of reliability defense is underfrequency relaying entities.
- FAC-002 - FAC-002 needs to include UFLS-only DPs in the applicability section so new or materially-modified existing Facilities are coordinated and studied appropriately. If FAC-002 does not include UFLS-only DPs, the UFLS-only DP may not coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator in accordance with FAC-002-2 Requirement R3.
- IRO-010 – If the UFLS-only DPs are not included, they may not provide data to its Reliability Coordinator in accordance with Requirement R3. This standard should include UFLS-only DP entities so that an RC can fully understand post-contingent projected system

conditions (i.e. OPA and RTA) that may recognize a possible underfrequency event and corresponding reaction to said event. If the RC does not have the UFLS information available that analyses will be incomplete. The same issue applies to TOP-003.

- COM-002 – If UFLS-only DP is not added to the applicability, that entity may not do the training required by COM-002-4 Requirement R3 or three part communication as required by COM-002-4 Requirement R6. A UFLS-only DP may receive Operating Instructions to coordinate the re-energization of underfrequency relay equipped load. That would indicate the need for proper communications between the appropriate parties. Furthermore, during a Blackstart scenario the UFLS-only DP may be required to not re-energize load (through an Operating Instruction) to help coordinate the stabilization of the grid during restoration.

Texas RE suggests modifying the SAR language to include these additional standards: *“Additionally, the project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section and to the applicable Requirement language of COM-002, EOP-004, FAC-002, IRO-010, TOP-003, PRC-005, PRC-006 and other standards noted during this project. The project will also include reviewing and revising adding UFLS-only DP as appropriate to the Applicability Sections and Requirement language for PRC-004 and PRC-008 and any other Standard to which this issue may apply.”*

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comments. Your comments to include Reliability Standards other than those referenced in the draft SAR would be outside the scope of this project. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes.

2. The SAR Drafting Team has merged the Project 2017-07 Standards Alignment with Registration SAR and the MOD-032-1 SAR into a single SAR for this project. Do you agree with the merging of the two SARs into a single SAR for Project 2017-07? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Jodirah Green - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standard Collaborations

Answer Yes

Document Name

Comment

Yes, there is agreement with merging Project 2017-17 Standards Alignment with Registration and MOD-032-1 SARs. The removal of Load Serving Entities (LSE) in the MOD-032-1 standard updates are in alignment with the removal of Purchasing-Selling Entity (PSE) and Interchange Authority (IA) that requires minor revisions to their respected impacted standards to align with the post Risk Based Registration (RBR) impacts.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Marsha Morgan - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|--|-----|
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no Dominion and ISO-NE | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Julie Hall - Entergy - 5,6, Group Name Entergy

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Ozan Ferrin - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 1,3,4,5 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Andrew Gallo - Austin Energy - 1,3,4,5,6 | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Thomas Foltz - AEP - 3,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|--|
| Dislikes 0 | |
| Response | |
| | |
| Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC | |
| Answer | |
| Document Name | |
| Comment | |
| SRC has no opinion for this question | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 1,3,4,5 - RF

Answer

Document Name

Comment

No comments.

Likes 0

Dislikes 0

Response

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer

Document Name

Comment

The IRC SRC asks whether this SAR is timely and whether there is truly a reliability gap if the changes are not made. We want to ensure that industry resources are made available to address the most critical reliability issues first. Now that NERC has begun a SER of all NERC standards on an expedited schedule, a wholesale re-look at all the standards; is it the best use of industry resources to begin another project that intends to open up the same standards to the standards development process that may also be subject to revisions through the SER process?

As a matter of efficiency, since the NERC Standards Process potentially opens up a standard to changes that were not contemplated in the SAR and can potentially extend the expected timelines to completion, should NERC explore alternative processes to reach industry consensus on projects such as this which are intended to complement already accepted changes by the industry (de-register LSEs)?

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. The SAR drafting team believes it is appropriate to address those issues at this time and as part of a dedicated, standalone effort. | |
| Brian Evans-Mongeon - Utility Services, Inc. - 4 | |
| Answer | |
| Document Name | |
| Comment | |
| <ol style="list-style-type: none"> In the Detailed Description section, “appropriate applicable entity” should be clarified to indicate that only NERC-registered entities will be potentially reassigned applicability. Adding PRC-008-0 to the scope of this SAR is irrelevant as this Standard is governed by and was combined with PRC-005-2/PRC-005-6 effective 4/1/2015 and will be retired when the full Implementation Plan of PRC-005-6 is complete. (From IP: <i>Standards PRC-005-1.1b, PRC-008-0, PRC-011-0, and PRC-017-0 shall remain enforceable throughout the phased implementation period set forth in the PRC-005-2(i) implementation plan, incorporated herein by reference, and shall be applicable to a registered entity’s Protection System Component maintenance activities not yet transitioned to PRC-005-2(i) or its combined successor standards. Standards PRC-005-1.1b, PRC-008-0, PRC-011-0, and PRC-017-0 shall be retired at midnight of March 31, 2027 or as otherwise made effective pursuant to the laws applicable to such Electric Reliability Organization (ERO) governmental authorities; or, in those jurisdictions where no regulatory approval is required, at midnight of March 31, 2027.</i>). Adding PRC-004-5(i) to the scope of this SAR is irrelevant as UFLS-only DP’s do not typically own BES interrupting devices that would operate and therefore would not be obligated by this Standard’s Requirements R1 and R2. A UFLS-only DP who does own BES interrupting devices would be additionally registered as a Transmission Owner (TO) as an owner of BES Elements and therefore this functional registration would obligate the Standard’s applicability. Additionally, for a DP who owns a portion of a Composite Protection System, and would possibly be notified by another entity of a BES interrupting device operation per Requirement R3, would be additionally registered as a UFLS-only DP per the NERC Rules of Procedure, Appendix 5B: Registration Criteria for DP (A DP - Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not | |

defined by a specific voltage, but rather as performing the distribution function at any voltage. Note: As provided in Section III.b.1 and Note 5 below, a Distribution Provider entity shall be an Underfrequency Load Shedding (UFLS)-Only Distribution Provider if it is the responsible entity that owns, controls or operates UFLS Protection System(s) needed to implement a required UFLS program designed for the protection of the BES, but does not meet any of the other registration criteria for a Distribution Provider.)

4. A definition for Underfrequency Load Shedding (UFLS) should be added to the Glossary of Terms to add clarity to the meaning of this term. Note that Undervoltage Load Shedding (UVLS) is currently in the Glossary of Terms (most recent definition effective 4/1/2017) but UFLS is not. FERC NOPR under Docket No. RM11-20-000; October 20, 2011 provides a reference to the 2003 Blackout Report (*U.S.-Canada Power System Outage Task Force, Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations at 92-93 (2004) (Blackout Report).*) and an “explanation” of UFLS which could be used as a reference for developing a definition (*[A]utomatic under-frequency load-shedding (UFLS) is designed for use in extreme conditions to stabilize the balance between generation and load after an electrical island has been formed, dropping enough load to allow frequency to stabilize within the island. All synchronous generators in North America are designed to operate at 60 cycles per second (Hertz) and frequency reflects how well load and generation are balanced—if there is more load than generation at any moment, frequency drops below 60 Hz, and it rises above that level if there is more generation than load. By dropping load to match available generation within the island, UFLS is a safety net that helps to prevent the complete blackout of the island, which allows faster system restoration afterward. UFLS is not effective if there is electrical instability or voltage collapse within the island.*)

Likes 0

Dislikes 0

Response

Thank you for your comments.

1. The SAR Drafting Team agrees and has made the clarifying revision to the SAR.
2. The SAR Drafting Team agrees and has removed PRC-008-0 from the SAR.
3. The SAR Drafting Team agrees and has removed PRC-004-5(i) from the SAR.
4. The SAR Drafting Team has held discussions to proposing to define UFLS for the NERC Glossary of Terms. The SAR Drafting Team has added the following language to the draft SAR: “In addition, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms.”

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| Thank you for the opportunity to provide comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| Texas RE dos not have additional comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no Dominion and ISO-NE | |
| Answer | |
| Document Name | |
| Comment | |

It would be helpful if the SAR contained the list of standards that are affected by the proposed changes.

Likes 0

Dislikes 0

Response

Thank you for your comment. The family of standards are contained within the SAR.

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer

Document Name

Comment

The SPP Standards Review Group (“SSRG”) generally supports the proposed scope and objectives for Project 2017-07 but reserves the right to provide additional comments once the standards drafting team issues draft revised standards for industry review.

At this time, the SPPRG would recommend the standards drafting team consider two generalized comments when drafting the initial revised standards:

Regarding MOD-32-1, SPP continues to review the SAR’s proposal to replace “Load Serving Entity” with either a Distribution Provider, Balancing Authority, or other “other applicable entity.” The SSRG understands “other applicable entity” to mean an applicable NERC Registered Entity, and this interpretation appears to be consistent with the SAR’s categorization that “certain data from LSEs may need to be provided by other *functional entities* going forward (emphasis added).” The standards drafting team must ensure that the NERC Registered Entity ultimately determined to be the appropriate replacement for Load Serving Entity will be able to meet the current data reporting requirements identified in Attachment 1 of MOD-32-1. To that end, the standard drafting team must also ensure the Planning Coordinator or Transmission Planner’s obligations will not be unreasonably impacted by the replacement of the Load Serving Entity function.

Regarding proposed changes to PRC-005 and PRC-006 to add Underfrequency Load Shedding (UFLS)-only DP to the applicability section of the standard(s), the SPPRG would recommend that the standards drafting team leverage pre-established language from existing standards, as appropriate, when updating PRC-005 and PRC-006. For example, the language in current PRC-004-5(i) at Section 4.2.2 provides the description “[u]nderfrequency load shedding (UFLS) that is intended to trip one or more BES elements” to clarify which sub-set of Distribution

Provider facilities are included in the standard. Such language could be utilized in Sections 4 of PRC-005 and PRC-006 to clarify the applicability to the UFLS-only DP. In other words, the goal of updating PRC-005 and PRC-006 may be accomplished by utilizing current approved language related to the UFLS-only DP from from other standards where appropriate.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SAR Drafting Team agrees and has made the clarifying revision of NERC Registered Entity to the SAR. The language suggestion for PRC-005 and PRC-006 is outside of the scope of the SAR Drafting Team. The SAR Drafting Team will forward the suggestion to the future drafting team.

Standard Authorization Request (SAR) Form

Complete and please email this form, with attachment(s) to: sarcomm@nerc.net

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|---|---|---|---|
| SAR Title: | Standards Alignment with Registration | | |
| Date Submitted: | | | |
| SAR Requester | | | |
| Name: | Revised by Project 2017-07 Standards Alignment with Registration SAR Drafting Team Stephen Wendling, Chair | | |
| Organization: | American Transmission Company | | |
| Telephone: | (608) 877-8232 | Email: | swendling@atcllc.com |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> New Standard | <input type="checkbox"/> Imminent Action/ Confidential Issue (SPM Section 10) | <input type="checkbox"/> Variance development or revision | <input type="checkbox"/> Other (Please specify) |
| <input checked="" type="checkbox"/> Revision to Existing Standard Add, Modify or Retire a Glossary Term | | | |
| <input type="checkbox"/> Withdraw/retire an Existing Standard | | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input checked="" type="checkbox"/> Regulatory Initiation | <input type="checkbox"/> NERC Standing Committee Identified | <input type="checkbox"/> Enhanced Periodic Review Initiated | <input checked="" type="checkbox"/> Industry Stakeholder Identified |
| <input type="checkbox"/> Emerging Risk (Reliability Issues Steering Committee) Identified | | | |
| <input type="checkbox"/> Reliability Standard Development Plan | | | |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| This project will align the Reliability Standards with the outcome of the Risk-Based Registration (RBR) initiative. | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| This project would modify Reliability Standards to be consistent with the FERC-approved changes to registration as part of the RBR initiative. | | | |
| Project Scope (Define the parameters of the proposed project): | | | |
| This project will review and align Reliability Standards impacted by the RBR initiative. | | | |
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g. research paper) to guide development of the Standard or definition): | | | |
| This project will formally address any remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities | | | |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

Requested information

(PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be removed or replaced by the appropriate functional entity. The project will include adding Underfrequency Load Shedding (UFLS)-only Distribution Providers (DPs) to the Applicability section of PRC-005 and PRC-006 per NERC registration criteria. Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as review the standards to ensure consistent use of the term Planning Coordinator.

The clean-up effort of the standards can be categorized into the following:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. For instance, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. The impacted standards include the BAL, CIP, IRO, and TOP family of standards. Additionally, PRC-005 and PRC-006 will be updated to add UFLS-only DP to the Applicability sections.
3. Initiatives that can address RBR updates through the periodic review process. The 2017-07 SAR drafting team should consider whether it or the periodic review teams currently reviewing those standards should make the necessary revisions.

Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project):

No additional costs outside of the time and resources needed to serve on the SAR and Standard Drafting Team.

Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (*e.g.* Dispersed Generation Resources):

None

To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (*e.g.* Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions):

Since LSE is being removed or replaced by either the Distribution Provider (DP), the Balancing Authority (BA), or the appropriate Applicable Entity for the standards that need to be updated, those entities will likely be best suited for the MOD and PRC updates.

Do you know of any consensus building activities² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity.

None

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Requested information |
|--|
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so which standard(s) or project number(s)? |
| None |
| Are there alternatives (e.g. guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. |

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input checked="" type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|--|----------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | Yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|--|---|
| Region(s)/ Interconnection | Explanation |
| NPCC and SERC | Regional Reliability Standards: PRC-006-NPCC-1 PRC-006-SERC-01 PRC-006-SERC-02 |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate) | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff <input type="checkbox"/> Draft SAR presented to SC for acceptance <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> Final SAR endorsed by the SC <input type="checkbox"/> SAR assigned a Standards Project by NERC <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-------------------|-----------------------------|------------------|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | December 11, 2017 | Standards Information Staff | Revised |
| 3 | February 1, 2018 | Standards Information Staff | Revised |

Standard Authorization Request (SAR) Form

Complete and please email this form, with attachment(s) to: sarcomm@nerc.net

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|---|---|---|---|
| SAR Title: | Standards Alignment with Registration | | |
| Date Submitted: | | | |
| SAR Requester | | | |
| Name: | Revised by Project 2017-07 Standards Alignment with Registration SAR Drafting Team Stephen Wendling, Chair | | |
| Organization: | American Transmission Company | | |
| Telephone: | (608) 877-8232 | Email: | swendling@atcllc.com |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> New Standard | <input type="checkbox"/> Imminent Action/ Confidential Issue (SPM Section 10) | <input type="checkbox"/> Variance development or revision | <input type="checkbox"/> Other (Please specify) |
| <input checked="" type="checkbox"/> Revision to Existing Standard Add, Modify or Retire a Glossary Term | | | |
| <input type="checkbox"/> Withdraw/retire an Existing Standard | | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input checked="" type="checkbox"/> Regulatory Initiation | <input type="checkbox"/> NERC Standing Committee Identified | <input type="checkbox"/> Enhanced Periodic Review Initiated | <input checked="" type="checkbox"/> Industry Stakeholder Identified |
| <input type="checkbox"/> Emerging Risk (Reliability Issues Steering Committee) Identified | | | |
| <input type="checkbox"/> Reliability Standard Development Plan | | | |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| This project will align the Reliability Standards with the outcome of the Risk-Based Registration (RBR) initiative. | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| This project would modify Reliability Standards to be consistent with the FERC-approved changes to registration as part of the RBR initiative. | | | |
| Project Scope (Define the parameters of the proposed project): | | | |
| This project will review and align Reliability Standards impacted by the RBR initiative. | | | |
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g. research paper) to guide development of the Standard or definition): | | | |
| This project will formally address any remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities | | | |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

Requested information

(PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be removed or replaced by ~~either the Distribution Provider (DP), the Balancing Authority (BA), or the appropriate functional applicable~~ entity. ~~Additionally, t~~The project will include adding Underfrequency Load Shedding (UFLS)-only Distribution Providers (DPs) to the Applicability ~~Section-section~~ of PRC-005 and PRC-006 per NERC registration criteria; ~~and review the Applicability sections of PRC-004 and PRC-008 and revise, as appropriate, to add UFLS-only DPs.~~ Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as review the standards to ensure consistent use of the term Planning Coordinator.

The clean-up effort of the standards can be categorized into the following:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. For instance, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. The impacted standards include the BAL, CIP, IRO, and TOP family of standards. Additionally, ~~PRC-005-1.1b~~ and ~~PRC-006-003~~ will be updated to add UFLS-only DP to the Applicability ~~Sectionssections~~, and a review of the Applicability Sections of PRC-004-5(i) and PRC-008-0 to add, as appropriate, UFLS-only DP to align with the post-RBR registration impacts.
3. Initiatives that can address RBR updates through the periodic review process. ~~The 2017-07 SAR drafting team should consider whether it or the periodic review teams currently reviewing those standards should make the necessary revisions. This would include the INT-004-3.1 and NUC-001-3 standards. Rather than the Project 2017-07 making the revisions the SDT could coordinate with the periodic review teams currently reviewing INT-004-3.1 and NUC-001-3 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.~~

Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project):

No additional costs outside of the time and resources needed to serve on the SAR and Standard Drafting Team.

Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g. Dispersed Generation Resources):

None

To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g. Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions):

| Requested information |
|---|
| Since LSE is being removed or replaced by either the Distribution Provider (DP), the Balancing Authority (BA), or the appropriate Applicable Entity for the standards that need to be updated, those entities will likely be best suited for the MOD and PRC updates. |
| Do you know of any consensus building activities ² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity. |
| None |
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so which standard(s) or project number(s)? |
| None |
| Are there alternatives (e.g. guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. |

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input checked="" type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|---|-------------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Market Interface Principles | |
|--|-----|
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | Yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|--|---|
| Region(s)/ Interconnection | Explanation |
| NPCC and SERC | <p>UFLS only DP will be added to the Applicability Section of PRC 006 and will create a variance of the following two Regional <u>Reliability</u> Standards:</p> <p>PRC-006-NPCC-1 PRC-006-SERC-01 PRC-006-SERC-02</p> |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate) | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff <input type="checkbox"/> Draft SAR presented to SC for acceptance <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> Final SAR endorsed by the SC <input type="checkbox"/> SAR assigned a Standards Project by NERC <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|----------|---|------------------------------------|------------------|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January December 11, 2017 | Standards Information Staff | Revised |
| <u>3</u> | <u>February 1, 2018</u> | <u>Standards Information Staff</u> | <u>Revised</u> |

Unofficial Comment Form

Project 2017-07 Standards Alignment with Registration

Do not use this form for submitting comments. Use the [electronic form](#) to submit comments on the revised Standards Authorization Request for **Project 2017-07 Standards Alignment with Registration**. The electronic form must be submitted by **8 p.m. Eastern, Friday, March 2, 2018**.

Additional information is available on the [project page](#). If you have questions, contact Standards Developer, [Laura Anderson](#) (via email), or at 404-446-9671.

Background Information

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) Initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system.

FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria. Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration is focused on making the tailored Reliability Standards updates necessary to reflect the retirement of PSEs, IAs, and LSEs (as well as all of their applicable references). This alignment includes three categories:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. Specifically, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. Additionally, PRC-005 and PRC-006 will be updated to add UFLS-only DP to the Applicability sections.
3. Initiatives that can address RBR updates through the periodic review process. The 2017-07 Standards Authorization Request (SAR) drafting team should consider whether it or the periodic review teams currently reviewing those standards should make the necessary revisions.

Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as reviewing the standards to ensure consistent use of the term Planning Coordinator.

Questions

1. The SAR drafting team added “Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as review the standards to ensure consistent use of the term Planning Coordinator.” Do you agree the project should consider including a definition for UFLS into the NERC Glossary of Terms and reviewing the standards to ensure consistent use of the term Planning Coordinator? If not, please explain why you do not agree and, if possible, **provide specific language revisions that would make it acceptable to you.**

Yes

No

Comments:

2. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes; as such, the SAR drafting team has removed references to PRC-004 and PRC-008 as being out of scope for this project. Do you agree that references to PRC-004 and PRC-008 should be removed from the SAR? If not, please explain why you do not agree and, if possible, **provide specific language revisions that would make it acceptable to you.**

Yes

No

Comments:

3. If you have any other comments on this SAR that you haven’t already mentioned above, please provide them here:

Comments:

Standards Announcement

Project 2017-07 Standards Alignment with Registration Standards Authorization Request

Formal Comment Period Open through March 2, 2018

[Now Available](#)

An additional 30-day formal comment period on the Standards Authorization Request (SAR) for Standards Alignment with Registration is open through **8 p.m. Eastern, Friday, March 2, 2018**.

Commenting

Use the [Standards Balloting and Commenting System](#) (SBS) to submit comments on the SAR. If you experience any difficulties using the electronic form, contact [Nasheema Santos](#). The unofficial Word version of the comment form is posted on the [project page](#).

- *If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The drafting team will review all responses received during the comment period and determine the next steps of the project.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446-9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower

Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2017-07 Standards Alignment with Registration | Revised Standards Authorization Request
Comment Period Start Date: 2/1/2018
Comment Period End Date: 3/2/2018
Associated Ballots:

There were 18 sets of responses, including comments from approximately 67 different people from approximately 53 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

1. The SAR drafting team added “Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as review the standards to ensure consistent use of the term Planning Coordinator.” Do you agree the project should consider including a definition for UFLS into the NERC Glossary of Terms and reviewing the standards to ensure consistent use of the term Planning Coordinator? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

2. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes; as such, the SAR Drafting Team has removed references to PRC-004 and PRC-008 as being out of scope for this project. Do you agree that references to PRC-004 and PRC-008 should be removed from the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

3. If you have any other comments on this SAR that you haven’t already mentioned above, please provide them here:

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|----------------------------------|-----------------|------------|---------------------|------------------------------|-------------------|---|-------------------------|---------------------|
| Brian Van Gheem | Brian Van Gheem | 6 | NA - Not Applicable | ACES Standards Collaborators | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | RF |
| | | | | | Ginger Mercier | Prairie Power, Inc. | 1,3 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Lucia Beal | Southern Maryland Electric Cooperative | 3 | RF |
| | | | | | Scott Brame | North Carolina Electric Membership Corporation | 3,4,5 | SERC |
| | | | | | Bill Hutchison | Southern Illinois Power Cooperative | 1 | SERC |
| | | | | | Ryan Strom | Buckeye Power, Inc. | 4 | RF |
| | | | | | Shari Heino | Brazos Electric Power Cooperative, Inc. | 1,5 | Texas RE |
| | | | | | Amber Skillern | East Kentucky Power Cooperative | 1,3 | SERC |
| | | | | | Susan Sosbe | Wabash Valley Power Association | 3 | RF |
| Southwest Power Pool, Inc. (RTO) | Charles Yeung | 2 | SPP RE | SRC | Ben Li | IESO | 2 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Lori Spence | MISO | 2 | MRO |
| | | | | | Mark Holman | PJM | 2 | RF |
| | | | | | Matt Goldberg | ISONE | 1 | NPCC |
| | | | | | Ali Miremadi | CAISO | 1 | WECC |

| | | | | | | | | |
|--------------------------------------|-------------------|----------------------|--------------|------------------|------------------|--------------------------------------|----|----------|
| | | | | | Nathan Bigbee | ERCOT | 1 | Texas RE |
| Duke Energy | Colby Bellville | 1,3,5,6 | FRCC,RF,SERC | Duke Energy | Doug Hils | Duke Energy | 1 | RF |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| Exelon | Daniel Gacek | 1,3,5,6 | | Exelon Utilities | Chris Scanlon | BGE, ComEd, PECO TO's | 1 | RF |
| | | | | | John Bee | BGE, ComEd, PECO LSE's | 3 | RF |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC no ISO-NE | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Wayne Sipperly | New York Power Authority | 4 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| | | | | | Bruce Metruck | New York Power Authority | 6 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |
| | | | | | Edward Bedder | Orange & Rockland Utilities | 1 | NPCC |
| | | | | | David Burke | Orange & Rockland Utilities | 3 | NPCC |
| | | | | | Michele Tondalo | UI | 1 | NPCC |
| | | | | | Laura Mcleod | NB Power | 1 | NPCC |
| | | | | | David Ramkalawan | Ontario Power Generation Inc. | 5 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC | | | | | |

| | | | | | | | | |
|----------------------------------|-----------------|---|------------|----------------------------|-------------------|--|---|---------------------|
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Michael Schiavone | National Grid | 1 | NPCC |
| | | | | | Michael Jones | National Grid | 3 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| | | | | | Michael Forte | Con Ed - Consolidated Edison | 1 | NPCC |
| | | | | | Daniel Grinkevich | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| | | | | | Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| | | | | | Brian O'Boyle | Con Ed - Consolidated Edison | 5 | NPCC |
| | | | | | Sean Cavote | PSEG | 4 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| | | | | | Sylvain Clermont | Hydro Quebec | 1 | NPCC |
| | | | | | Chantal Mazza | Hydro Quebec | 2 | NPCC |
| Southwest Power Pool, Inc. (RTO) | Shannon Mickens | 2 | MRO,SPP RE | SPP Standards Review Group | Leo Bernier | AES - AES Corporation | 5 | NA - Not Applicable |

1. The SAR drafting team added “Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as review the standards to ensure consistent use of the term Planning Coordinator.” Do you agree the project should consider including a definition for UFLS into the NERC Glossary of Terms and reviewing the standards to ensure consistent use of the term Planning Coordinator? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer No

Document Name

Comment

1. Utility Services agrees that a definition for UFLS and/or UFLS Program should be considered to be included in the NERC Glossary of Terms.
2. The FERC Order approving the Risk Based Registration Initiative did not include provisions for examining the consistent use of the term Planning Coordinator. We suggest this effort should be addressed as part of the Standards Efficiency Review project.

Likes 0

Dislikes 0

Response

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer No

Document Name

Comment

The IRC SRC supports adding a definition for UFLS into the Glossary of Terms. We do not agree that the review of all NERC standards for consistent use of the term Planning Coordinator is fruitful until the Standards Efficiency Review (SER) process is complete. This process may result in significant reductions and/or modifications to the NERC reliability standards. In fact, it would be more efficient to assess the consistency of “Planning Coordinator” if and when SARs are issued from the SER process. Unless there is a known problem with compliance and/or with ensuring reliability of the grid due to the lack of consistent application of the term, we see no need to undertake such a review at this time.

Likes 0

Dislikes 0

Response

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| UFLS should be well defined to reduce the confusion and subjectivity of assuring performance. There is a lot of inconsistency in how UFLS is currently being identified. This has resulted in a lot of subjectivity in auditing against these standards. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Daniel Gacek - Exelon - 1,3,5,6, Group Name Exelon Utilities | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The Exelon companies request that the SAR team provide additional detail regarding the changes to the SAR. We did not see anything in previous revisions or comments about the Planning Coordinator role. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thomas Foltz - AEP - 3,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AEP has no objections to the standard drafting team considering adding a definition for UFLS to the NERC Glossary of Terms. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>The SPP Standards Review Group is in support of the SAR drafting team considering the inclusion of a definition for UFLS into the NERC Glossary of Terms. However, we would also ask the drafting team to take into consideration adding both the manual and automatic load shedding processes into their preliminary discussions for the development of the UFLS definition. From our perspective, the two processes need to be considered in order to maintain integrity and flexibility to the UFLS process as well as help the industry meet their functional roles pertaining to the reliability of the BES. As we reviewed standards like PRC-006-3, we observed that the term “UFLS Program” is mentioned throughout the document, however, it’s not defined in the NERC Glossary of Terms. Additionally, we reviewed the UVLS Program definition and our interpretation would have us believe that this definition is only addressing the automatic load shedding process. Finally, our research helped us identify that there is no definition in the NERC Glossary of Terms pertaining to manual load shedding. At this point of the process, we would like to suggest two options that could be used in your discussion in reference to the UFLS definition (see below).</p> <p>Option 1</p> <p>We suggest developing definitions for both terms “manual load shedding” and “UFLS Program” as well as including them in the NERC Glossary of Terms. This option may require developing a definition for manual load shedding as well UFLS Program.</p> <p>Option 2</p> <p>We suggest developing a definition for “UFLS Program” as you could use the “UVLS Program” definition as a foundational anchor and modify the definition to incorporate “manual load shedding” (see example below). However, this proposed action may require coordination with the UVLS drafting team (which may be out of scope) and may require the revision of the UVLS Program definition in the future.</p> <p>Undervoltage Load Shedding Program (original definition) - An automatic load shedding program, consisting of distributed relays and controls, used to mitigate undervoltage conditions impacting the Bulk Electric System (BES), leading to voltage instability, voltage collapse, or Cascading. Centrally controlled undervoltage-based load shedding is not included.</p> <p>Underfrequency Load Shedding Program (modified proposed definition) - Manual and automatic load shedding programs, consisting of distributed relays and controls, used to mitigate underfrequency conditions impacting the Bulk Electric System (BES), leading to voltage instability, voltage collapse, or Cascading. Centrally controlled undervoltage-based load shedding aer not included.</p> | |
| Likes 0 | |

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Scott Langston - Tallahassee Electric (City of Tallahassee, FL) - 1,3,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Michelle Amarantos - APS - Arizona Public Service Co. - 1,3,5,6

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Hien Ho - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| David Ramkalawan - David Ramkalawan - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no ISO-NE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Van Gheem - Brian Van Gheem - 6, Group Name ACES Standards Collaborators

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Richard Vine - Richard Vine - 2

Answer

Document Name

Comment

The California ISO supports the comments of the ISO/RTO Council Standards Review Committee

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

| | |
|--|--|
| Document Name | |
| Comment | |
| Texas RE is not opposed to defining UFLS, as long as it focuses on the technical side of UFLS and does not attempt to narrow the scope of applicability. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

2. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes; as such, the SAR Drafting Team has removed references to PRC-004 and PRC-008 as being out of scope for this project. Do you agree that references to PRC-004 and PRC-008 should be removed from the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer No

Document Name

Comment

Reliability Standard PRC-008 is not scheduled to be retired until 2027, as part of the PRC-005-6 implementation plan. Texas RE recommends including PRC-008 until it is fully retired.

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 3,5

Answer Yes

Document Name

Comment

AEP has no objections to removing PRC-004 and PRC-008 from the proposed SAR for Project 2017-07.

Likes 0

Dislikes 0

Response

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer

Yes

Document Name

Comment

1. Utility Services agrees that references to PRC-004 ad PRC-008 are out of scope for this project, and, it should be noted that these two Standards were never part of the original FERC Order approving the Risk Based Registration Initiative.

Likes 0

Dislikes 0

Response

Brian Van Gheem - Brian Van Gheem - 6, Group Name ACES Standards Collaborators

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no ISO-NE

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Ramkalawan - David Ramkalawan - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Hien Ho - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Michelle Amarantos - APS - Arizona Public Service Co. - 1,3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1,3,5,6, Group Name Exelon Utilities

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Richard Vine - Richard Vine - 2 | |
| Answer | |
| Document Name | |
| Comment | |
| | |
| The California ISO supports the comments of the ISO/RTO Council Standards Review Committee | |

Likes 0

Dislikes 0

Response

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer

Document Name

Comment

1. The redline edit of the phrase 'the appropriate applicable entity' in the Detailed Description section has been changed to 'the appropriate functional entity' in this SAR posting, however this does not sufficiently clarify that the reassignment of applicability will only be to 'the appropriate NERC registered entity' as suggested by commenters in the previous posting. This phrase should be clarified to indicate only NERC registered entities will be potentially reassigned applicability.

Likes 0

Dislikes 0

Response

Richard Vine - Richard Vine - 2

Answer

Document Name

Comment

The California ISO supports the comments of the ISO/RTO Council Standards Review Committee

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

As stated in the previous comment period to this SAR, Texas RE recommends the SAR drafting team consider adding UFLS-only DPs to the applicability and requirement section of additional standards than were listed in the SAR. Texas RE does not agree that these standards are out of scope for this project and there is a reliability risk associated with not including UFLS-only DPs to the applicability and requirements sections of the standards described below. Texas RE notes the SAR does include reviewing the standards to ensure consistent use of the term Planning Coordinator. Texas RE respectfully requests the SAR drafting team describe how these standards are not in scope of this project. Furthermore, why is it in scope to review the standards to ensure consistent use of the term Planning Coordinator, but out of scope to review the standards listed below for consideration of adding UFLS-only DPs? Texas RE suggests it would be more efficient to consider making these changes now, while there is an open project related to applicability, rather than later, when there may or may not be an open project related to these standards.

Texas RE requests consideration of the following standards:

- EOP-004 – Add UFLS-only DPs as an entity with Reporting Responsibility in Attachment 1 to the following Event Types:
 - Automatic firm load shedding ≥ 100 MW (via automatic undervoltage or underfrequency load shedding schemes, or RAS) – If the event occurs to a UFLS-only DP, should be expected to have reporting responsibility. If it is not required, the UFLS-only DP may not report the event and thus there would be no opportunity to analyze it and make improvements in the future.
 - Damage or destruction of a Facility - UFLS DPs should have reporting responsibilities since one of the last lines of reliability defense is underfrequency relaying entities. If it is not required, the UFLS-only DP may not report the event and thus there would be no opportunity to analyze it and make improvements in the future.
- FAC-002 - FAC-002 needs to include UFLS-only DPs in the applicability section so new or materially-modified existing Facilities are coordinated and studied appropriately. If FAC-002 does not include UFLS-only DPs, the UFLS-only DP may not coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator in accordance with FAC-002-2 Requirement R3.
- IRO-010 – If the UFLS-only DPs are not included, they may not provide data to its Reliability Coordinator in accordance with Requirement R3. This standard should include UFLS-only DP entities so that an RC can fully understand post-contingent projected system conditions (i.e. OPA and RTA) that may recognize a possible underfrequency event and corresponding reaction to said event. If the RC does not have the UFLS information available that analyses will be incomplete. The same issue applies to TOP-003.
- COM-002 – If UFLS-only DP is not added to the applicability, that entity may not do the training required by COM-002-4 Requirement R3 or three-part communication as required by COM-002-4 Requirement R6. A UFLS-only DP may receive Operating Instructions to coordinate the re-energization of underfrequency relay equipped load. That would indicate the need for proper communications between the appropriate parties. Furthermore, during a Blackstart scenario the UFLS-only DP may be required to not re-energize load (through an Operating Instruction) to help coordinate the stabilization of the grid during restoration.

Texas RE suggests modifying the SAR language to include these additional standards: *“Additionally, the project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section and to the applicable Requirement language of COM-002, EOP-004, FAC-002, IRO-010, TOP-003, PRC-005, PRC-006 and other standards noted during this project. The project will also include reviewing and revising*

adding UFLS-only DP as appropriate to the Applicability Sections and Requirement language for PRC-004 and PRC-008 and any other Standard to which this issue may apply.”

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

Brian Van Gheem - Brian Van Gheem - 6, Group Name ACES Standards Collaborators

Answer

Document Name

Comment

1. We believe the SAR Type should include the option of withdrawing or retiring a Reliability Standard. If the SDT is assigned to implement the recommendations from a periodic review process, these could include the retirement of specific standards.
2. Under the detailed description of the proposed SAR, references to the FAC, INT, MOD, and NUC standard families are missing from the list of clean-up efforts to modify the Reliability Standard applicable entities (category #2). We ask the SDT to include these references under the specific clean-up effort category.
3. We believe a clarification is necessary regarding the intentions to review Reliability Standards and ensure consistent use of Planning Coordinator. A resolution to the long-standing debate between Planning Authority versus Planning Coordinator is long overdue, and we believe a separate clean-up effort should be identified. We propose the inclusion of “Modifications to existing standards and NERC Glossary Terms that replace references to Planning Authority with Planning Coordinator” to the list.
4. We thank you for this opportunity to provide these comments.

Likes 0

Dislikes 0

Response

Consideration of Comments

| | |
|-----------------------------------|---|
| Project Name: | 2017-07 Standards Alignment with Registration Revised Standards Authorization Request |
| Comment Period Start Date: | 2/1/2018 |
| Comment Period End Date: | 3/2/2018 |
| Associated Ballots: | |

There were 18 sets of responses, including comments from approximately 76 different people from approximately 62 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Senior Director of Standards and Education, [Howard Gugel](#) (via email) or at (404) 446-9693.

Questions

- 1. The SAR drafting team added “Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as review the standards to ensure consistent use of the term Planning Coordinator.” Do you agree the project should consider including a definition for UFLS into the NERC Glossary of Terms and reviewing the standards to ensure consistent use of the term Planning Coordinator? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.**
- 2. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes; as such, the SAR Drafting Team has removed references to PRC-004 and PRC-008 as being out of scope for this project. Do you agree that references to PRC-004 and PRC-008 should be removed from the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.**
- 3. If you have any other comments on this SAR that you haven’t already mentioned above, please provide them here:**

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|----------------------|-----------------|------------|---------------------|------------------------------|-------------------|---|-------------------------|---------------------|
| ACES Power Marketing | Brian Van Gheem | 6 | NA - Not Applicable | ACES Standards Collaborators | Greg Froehling | Rayburn Country Electric Cooperative, Inc. | 3 | SPP RE |
| | | | | | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | RF |
| | | | | | Ginger Mercier | Prairie Power, Inc. | 1,3 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Lucia Beal | Southern Maryland Electric Cooperative | 3 | RF |
| | | | | | Scott Brame | North Carolina Electric Membership Corporation | 3,4,5 | SERC |

| | | | | | | | | |
|----------------------------------|---------------|---|--------|-----|----------------|---|-----|----------|
| | | | | | Tara Lightner | Sunflower Electric Power Corporation | 1 | SPP RE |
| | | | | | Bill Hutchison | Southern Illinois Power Cooperative | 1 | SERC |
| | | | | | Ryan Strom | Buckeye Power, Inc. | 4 | RF |
| | | | | | Shari Heino | Brazos Electric Power Cooperative, Inc. | 1,5 | Texas RE |
| | | | | | Amber Skillern | East Kentucky Power Cooperative | 1,3 | SERC |
| | | | | | Susan Sosbe | Wabash Valley Power Association | 3 | RF |
| Southwest Power Pool, Inc. (RTO) | Charles Yeung | 2 | SPP RE | SRC | Charles Yeung | SPP | 2 | SPP RE |
| | | | | | Ben Li | IESO | 2 | NPCC |
| | | | | | Greg Campoli | NYISO | 2 | NPCC |
| | | | | | Lori Spence | MISO | 2 | MRO |
| | | | | | Mark Holman | PJM | 2 | RF |

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|--------------------------------------|-----------------|----------------------|--------------|------------------|-----------------|--------------------------------------|----|----------|
| | | | | | Matt Goldberg | ISONE | 1 | NPCC |
| | | | | | Ali Miremadi | CAISO | 1 | WECC |
| | | | | | Nathan Bigbee | ERCOT | 1 | Texas RE |
| Exelon | Chris Scanlon | 1,3,5,6 | | Exelon Utilities | Chris Scanlon | BGE, ComEd, PECO TO's | 1 | RF |
| | | | | | John Bee | BGE, ComEd, PECO LSE's | 3 | RF |
| Duke Energy | Colby Bellville | 1,3,5,6 | FRCC,RF,SERC | Duke Energy | Doug Hils | Duke Energy | 1 | RF |
| | | | | | Lee Schuster | Duke Energy | 3 | FRCC |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC no ISO-NE | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Wayne Sipperly | New York Power Authority | 4 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |

| | | | |
|------------------|------------------------------------|---|------|
| Brian Robinson | Utility Services | 5 | NPCC |
| Bruce Metruck | New York Power Authority | 6 | NPCC |
| Alan Adamson | New York State Reliability Council | 7 | NPCC |
| Edward Bedder | Orange & Rockland Utilities | 1 | NPCC |
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Michele Tondalo | UI | 1 | NPCC |
| Laura Mcleod | NB Power | 1 | NPCC |
| David Ramkalawan | Ontario Power Generation Inc. | 5 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| Helen Lainis | IESO | 2 | NPCC |

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|-------------------|--|---|------|
| Michael Schiavone | National Grid | 1 | NPCC |
| Michael Jones | National Grid | 3 | NPCC |
| Greg Campoli | NYISO | 2 | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| Michael Forte | Con Ed - Consolidated Edison | 1 | NPCC |
| Daniel Grinkevich | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Brian O'Boyle | Con Ed - Consolidated Edison | 5 | NPCC |
| Sean Cavote | PSEG | 4 | NPCC |
| Sean Bodkin | Dominion - Dominion | 6 | NPCC |

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|---------------------------------|-----------------|---|--------|----------------------------|--------------------|----------------------------------|-------------------------------|
| | | | | | Resources, Inc. | | |
| | | | | | Sylvain Clermont | Hydro Quebec | 1 NPCC |
| | | | | | Chantal Mazza | Hydro Quebec | 2 NPCC |
| Southwest PowerPool, Inc. (RTO) | Shannon Mickens | 2 | SPP RE | SPP Standards Review Group | Shannon Mickens | Southwest Power Pool Inc. | 2 SPP RE |
| | | | | | Don Schmit | Nebraska Public Power District | 5 SPP RE |
| | | | | | Deborah McEndaffer | Midwest Energy, Inc | NA - Not Applicable SPP RE |
| | | | | | Leo Bernier | AES - AES Corporation | 5 NA - Not Applicable |
| | | | | | Louis Guidry | Cleco | 1,3,5,6 SPP RE |
| | | | | | Mike Kidwell | Empire District Electric Company | 1,3,5 SPP RE |

1. The SAR drafting team added “Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as review the standards to ensure consistent use of the term Planning Coordinator.” Do you agree the project should consider including a definition for UFLS into the NERC Glossary of Terms and reviewing the standards to ensure consistent use of the term Planning Coordinator? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer No

Document Name

Comment

1. Utility Services agrees that a definition for UFLS and/or UFLS Program should be considered to be included in the NERC Glossary of Terms.
2. The FERC Order approving the Risk Based Registration Initiative did not include provisions for examining the consistent use of the term Planning Coordinator. We suggest this effort should be addressed as part of the Standards Efficiency Review project.

Likes 0

Dislikes 0

Response

Thank you for your comments. The SAR drafting team agrees with your comment and has added “and/or UFLS Program” to the SAR for this project. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes. It is a NERC initiative to examine the standards for the consistent use of the term Planning Coordinator. The SAR drafting team believes it is appropriate to address those issues at this time and as part of this development effort.

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC

Answer No

Document Name

Comment

The IRC SRC supports adding a definition for UFLS into the Glossary of Terms. We do not agree that the review of all NERC standards for consistent use of the term Planning Coordinator is fruitful until the Standards Efficiency Review (SER) process is complete. This process may result in significant reductions and/or modifications to the NERC reliability standards. In fact, it would be more efficient to assess the consistency of “Planning Coordinator” if and when SARs are issued from the SER process. Unless there is a known problem with compliance and/or with ensuring reliability of the grid due to the lack of consistent application of the term, we see no need to undertake such a review at this time.

Likes 0

Dislikes 0

Response

Thank you for your comments. It is a NERC initiative to examine the standards for the consistent use of the term Planning Coordinator. The SAR drafting team believes it is appropriate to address those issues at this time and as part of this development effort.

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer Yes

Document Name

Comment

UFLS should be well defined to reduce the confusion and subjectivity of assuring performance. There is a lot of inconsistency in how UFLS is currently being identified. This has resulted in a lot of subjectivity in auditing against these standards.

Likes 0

Dislikes 0

Response

Thank you for your affirmative comment.

Chris Scanlon - Exelon - 1,3,5,6, Group Name Exelon Utilities

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| The Exelon companies request that the SAR team provide additional detail regarding the changes to the SAR. We did not see anything in previous revisions or comments about the Planning Coordinator role. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comments. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes. It is a NERC initiative to examine the standards for the consistent use of the term Planning Coordinator. The SAR drafting team believes it is appropriate to address those issues at this time and as part of this development effort. The addition of the Planning Coordinator examination for consistent use in the standards was added to this version of the SAR and the SAR was reposted due to the changes made to the SAR. | |
| Thomas Foltz - AEP - 3,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AEP has no objections to the standard drafting team considering adding a definition for UFLS to the NERC Glossary of Terms. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your affirmative comment.

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Thank you for your affirmative response.

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer Yes

Document Name

Comment

The SPP Standards Review Group is in support of the SAR drafting team considering the inclusion of a definition for UFLS into the NERC Glossary of Terms. However, we would also ask the drafting team to take into consideration adding both the manual and automatic load shedding processes into their preliminary discussions for the development of the UFLS definition. From our perspective, the two processes need to be considered in order to maintain integrity and flexibility to the UFLS process as well as help the industry meet their functional roles pertaining to the reliability of the BES. As we reviewed standards like PRC-006-3, we observed that the term “UFLS Program” is mentioned throughout the document, however, it’s not defined in the NERC Glossary of Terms. Additionally, we reviewed the UVLS Program definition and our interpretation would have us believe that this definition is only addressing the automatic load shedding process. Finally, our research helped us identify that there is no definition in the NERC Glossary of Terms pertaining to manual load shedding. At this point of the process, we would like to suggest two options that could be used in your discussion in reference to the UFLS definition (see below).

Option 1

We suggest developing definitions for both terms “manual load shedding” and “UFLS Program” as well as including them in the NERC Glossary of Terms. This option may require developing a definition for manual load shedding as well UFLS Program.

Option 2

We suggest developing a definition for “UFLS Program” as you could use the “UVLS Program” definition as a foundational anchor and modify the definition to incorporate “manual load shedding” (see example below). However, this proposed action may require coordination with the UVLS drafting team (which may be out of scope) and may require the revision of the UVLS Program definition in the future.

Undervoltage Load Shedding Program (original definition) - An automatic load shedding program, consisting of distributed relays and controls, used to mitigate undervoltage conditions impacting the Bulk Electric System (BES), leading to voltage instability, voltage collapse, or Cascading. Centrally controlled undervoltage-based load shedding is not included.

Underfrequency Load Shedding Program (modified proposed definition) - Manual and automatic load shedding programs, consisting of distributed relays and controls, used to mitigate underfrequency conditions impacting the Bulk Electric System (BES), leading to voltage instability, voltage collapse, or Cascading. Centrally controlled undervoltage-based load shedding aer not included.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comments. The SAR drafting team has added to the SAR: “UFLS and/or UFLS Program” for definition consideration. UVLS definitions would be out of scope for this project. The future standards drafting team will consider and develop what components UFLS Program consists of, should the future drafting team develop a definition for UFLS Program.

Leonard Kula - Independent Electricity System Operator - 2

| | |
|--------|-----|
| Answer | Yes |
|--------|-----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Scott Langston - Tallahassee Electric (City of Tallahassee, FL) - 1,3,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Michelle Amarantos - APS - Arizona Public Service Co. - 1,3,5,6 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Thank you for your affirmative response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Hien Ho - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Thank you for your affirmative response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no ISO-NE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Brian Van Gheem - ACES Power Marketing - 6, Group Name ACES Standards Collaborators | |
| Answer | Yes |

| | |
|--|--|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your affirmative response. | |
| Richard Vine - California ISO - 2 | |
| Answer | |
| Document Name | |
| Comment | |
| The California ISO supports the comments of the ISO/RTO Council Standards Review Committee | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see responses to ISO/RTO Council Standards Review Committee. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| Texas RE is not opposed to defining UFLS, as long as it focuses on the technical side of UFLS and does not attempt to narrow the scope of applicability. | |

| | |
|---|--|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your affirmative comment. | |

2. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes; as such, the SAR Drafting Team has removed references to PRC-004 and PRC-008 as being out of scope for this project. Do you agree that references to PRC-004 and PRC-008 should be removed from the SAR? If not, please explain why you do not agree and, if possible, provide specific language revisions that would make it acceptable to you.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

Reliability Standard PRC-008 is not scheduled to be retired until 2027, as part of the PRC-005-6 implementation plan. Texas RE recommends including PRC-008 until it is fully retired.

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

| |
|-----------------|
| Response |
|-----------------|

Thank you for your comment. The SAR drafting team removed PRC-008 from the SAR as being out of scope of the project. PRC-008 is not contained within the FERC Order approving the Risk Based Registration Initiative.

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

None

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Thank you for your affirmative response.

Thomas Foltz - AEP - 3,5

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

AEP has no objections to removing PRC-004 and PRC-008 from the proposed SAR for Project 2017-07.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your affirmative response.

Brian Evans-Mongeon - Utility Services, Inc. - 4

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

- Utility Services agrees that references to PRC-004 and PRC-008 are out of scope for this project, and, it should be noted that these two Standards were never part of the original FERC Order approving the Risk Based Registration Initiative.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your affirmative comment.

Brian Van Gheem - ACES Power Marketing - 6, Group Name ACES Standards Collaborators

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC no ISO-NE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| David Ramkalawan - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your affirmative response. | |
| Hien Ho - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your affirmative response. | |
| Michelle Amarantos - APS - Arizona Public Service Co. - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your affirmative response. | |
| Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name SRC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Thank you for your affirmative response.

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your affirmative response.

Chris Scanlon - Exelon - 1,3,5,6, Group Name Exelon Utilities

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your affirmative response.

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your affirmative response.

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your affirmative response.

Richard Vine - California ISO - 2

Answer

Document Name

Comment

The California ISO supports the comments of the ISO/RTO Council Standards Review Committee

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to ISO/RTO Council Standards Review Committee.

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Brian Evans-Mongeon - Utility Services, Inc. - 4

Answer

Document Name

Comment

1. The redline edit of the phrase 'the appropriate applicable entity' in the Detailed Description section has been changed to 'the appropriate functional entity' in this SAR posting, however this does not sufficiently clarify that the reassignment of applicability will only be to 'the appropriate NERC registered entity' as suggested by commenters in the previous posting. This phrase should be clarified to indicate only NERC registered entities will be potentially reassigned applicability.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SAR drafting team has updated the SAR to read: "appropriate registered functional entity."

Richard Vine - California ISO - 2

Answer

Document Name

Comment

The California ISO supports the comments of the ISO/RTO Council Standards Review Committee

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to ISO/RTO Council Standards Review Committee.

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

As stated in the previous comment period to this SAR, Texas RE recommends the SAR drafting team consider adding UFLS-only DPs to the applicability and requirement section of additional standards than were listed in the SAR. Texas RE does not agree that these standards are out of scope for this project and there is a reliability risk associated with not including UFLS-only DPs to the applicability and requirements sections of the standards described below. Texas RE notes the SAR does include reviewing the standards to ensure consistent use of the term Planning Coordinator. Texas RE respectfully requests the SAR drafting team describe how these standards are not in scope of this project. Furthermore, why is it in scope to review the standards to ensure consistent use of the term Planning Coordinator, but out of scope to review the standards listed below for consideration of adding UFLS-only DPs? Texas RE suggests it would be more efficient to consider making these changes now, while there is an open project related to applicability, rather than later, when there may or may not be an open project related to these standards.

Texas RE requests consideration of the following standards:

- EOP-004 – Add UFLS-only DPs as an entity with Reporting Responsibility in Attachment 1 to the following Event Types:
 - Automatic firm load shedding ≥ 100 MW (via automatic undervoltage or underfrequency load shedding schemes, or RAS) – If the event occurs to a UFLS-only DP, should be expected to have reporting responsibility. If it is not required, the UFLS-only DP may not report the event and thus there would be no opportunity to analyze it and make improvements in the future.
 - Damage or destruction of a Facility - UFLS DPs should have reporting responsibilities since one of the last lines of reliability defense is underfrequency relaying entities. If it is not required, the UFLS-only DP may not report the event and thus there would be no opportunity to analyze it and make improvements in the future.
- FAC-002 - FAC-002 needs to include UFLS-only DPs in the applicability section so new or materially-modified existing Facilities are coordinated and studied appropriately. If FAC-002 does not include UFLS-only DPs, the UFLS-only DP may not coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator in accordance with FAC-002-2 Requirement R3.
- IRO-010 – If the UFLS-only DPs are not included, they may not provide data to its Reliability Coordinator in accordance with Requirement R3. This standard should include UFLS-only DP entities so that an RC can fully understand post-contingent projected system conditions (i.e. OPA and RTA) that may recognize a possible underfrequency event and corresponding reaction to said event. If the RC does not have the UFLS information available that analyses will be incomplete. The same issue applies to TOP-003.
- COM-002 – If UFLS-only DP is not added to the applicability, that entity may not do the training required by COM-002-4 Requirement R3 or three-part communication as required by COM-002-4 Requirement R6. A UFLS-only DP may receive Operating Instructions to coordinate the re-energization of underfrequency relay equipped load. That would indicate the need for proper communications between the appropriate parties. Furthermore, during a Blackstart scenario the UFLS-only DP may be required to not re-energize load (through an Operating Instruction) to help coordinate the stabilization of the grid during restoration.

Texas RE suggests modifying the SAR language to include these additional standards: *“Additionally, the project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section and to the applicable Requirement language of COM-002, EOP-004, FAC-002, IRO-010, TOP-003, PRC-005, PRC-006 and other standards noted during this project. The project will also include reviewing and revising adding UFLS-only DP as appropriate to the Applicability Sections and Requirement language for PRC-004 and PRC-008 and any other Standard to which this issue may apply.”*

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. Project 2017-07 is a review and alignment effort resulting from the RBR Initiative project and would modify Reliability Standards to be consistent with the FERC-approved changes. It is a NERC initiative to examine the standards for the consistent use of the term Planning Coordinator. The SAR drafting team believes it is appropriate to address those issues at this time and as part of this development effort. | |
| Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group | |
| Answer | |
| Document Name | |
| Comment | |
| N/A | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Brian Van Gheem - ACES Power Marketing - 6, Group Name ACES Standards Collaborators | |
| Answer | |
| Document Name | |
| Comment | |
| <ol style="list-style-type: none"> We believe the SAR Type should include the option of withdrawing or retiring a Reliability Standard. If the SDT is assigned to implement the recommendations from a periodic review process, these could include the retirement of specific standards. | |

2. Under the detailed description of the proposed SAR, references to the FAC, INT, MOD, and NUC standard families are missing from the list of clean-up efforts to modify the Reliability Standard applicable entities (category #2). We ask the SDT to include these references under the specific clean-up effort category.
3. We believe a clarification is necessary regarding the intentions to review Reliability Standards and ensure consistent use of Planning Coordinator. A resolution to the long-standing debate between Planning Authority versus Planning Coordinator is long overdue, and we believe a separate clean-up effort should be identified. We propose the inclusion of “Modifications to existing standards and NERC Glossary Terms that replace references to Planning Authority with Planning Coordinator” to the list.
4. We thank you for this opportunity to provide these comments.

Likes 0

Dislikes 0

Response

Thank you for your comment. If requirement or standard retirement recommendations result from a periodic review, a SAR would be created by the periodic review team(s). The future drafting team will be coordinating efforts with the periodic review teams. The SAR drafting team has added FAC, INT, MOD, and NUC to Category No. 2. The SAR drafting team has updated the SAR to read: “as well as to conduct a review and develop modifications to the standards to ensure consistent use of the term Planning Coordinator.”

Unofficial Nomination Form

Project 2017-07 Standards Alignment with Registration

Standards Drafting Team

Do not use this form for submitting nominations. Use the [electronic form](#) to submit nominations by **8 p.m. Eastern, Monday, May 14, 2018**. This unofficial version is provided to assist nominees in compiling the information necessary to submit the electronic form.

Additional information about this project is available on the [Project 2017-07 Standards Alignment with Registration](#) page. If you have questions, contact Standards Developer, [Laura Anderson](#) (via email), or at 404-446-9671.

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

Previous drafting or review team experience is beneficial, but not required. A brief description of the desired qualifications, expected commitment, and other pertinent information is included below.

Project 2017-07 Standards Alignment with Registration

The purpose of this project is focused on making the tailored Reliability Standards updates necessary to reflect the retirement of PSEs, IAs, and LSEs (as well as all of their applicable references). This alignment includes three categories:

1. Modifications to existing standards where the removal of the retired function may need replacement by another function. For instance, Reliability Standard MOD-032-1 specifies certain data from LSEs that may need to be provided by other functional entities going forward.
2. Modifications where the applicable entity and references may be removed. These updates may be able to follow a similar process to the Paragraph 81 initiatives where standards are redlined and posted for industry comment and ballot. A majority of the edits would simply remove deregistered functional entities and their applicable requirements/references. The impacted standards include the BAL, CIP, IRO, and TOP family of standards. Additionally, PRC-005 and PRC-006 will be updated to add UFLS-only DP to the Applicability Sections.
3. Initiatives that can address RBR updates through the periodic review process. This would include the INT-004-3.1 and NUC-001-3 standards. Rather than the Project 2017-07 making the revisions the SDT could coordinate with the periodic review teams currently reviewing INT-004-3.1 and NUC-001-3 so that any changes resulting from those periodic reviews, if any, may be proposed at the same time after completion of each periodic review.

Standards affected:

This project will formally address any remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the BAL, CIP, FAC, INT, IRO,

MOD, NUC, and TOP family of standards to remove the references to Purchasing-Selling Entities (PSEs) and Interchange Authorities (IAs); references to the Load-Serving Entity (LSEs) will be removed or replaced by the appropriate NERC Registered Entity. The project will include adding Underfrequency Load Shedding (UFLS)-only DPs to the Applicability Section of PRC-005 and PRC-006 per NERC registration criteria. Additionally, the project will consider whether to include a definition for UFLS into the NERC Glossary of Terms, as well as reviewing the standards to ensure consistent use of the term Planning Coordinator.

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) Initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system.

FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria. Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

The time commitment for this project is expected to be up to two face-to-face meetings per quarter (on average two full working days each meeting) with conference calls scheduled as needed to meet the agreed-upon timeline the standards drafting team sets forth. Team members may also have side projects, either individually or by subgroup, to present to the larger team for discussion and review. Lastly, an important component of the standards drafting team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful project outcome.

| | | |
|--|---|--|
| Name: | | |
| Organization: | | |
| Address: | | |
| Telephone: | | |
| E-mail: | | |
| Please briefly describe your experience and qualifications to serve on the requested Standard Drafting Team (Bio): | | |
| <p>If you are currently a member of any NERC drafting team, please list each team here:</p> <input type="checkbox"/> Not currently on any active SAR or standard drafting team. <input type="checkbox"/> Currently a member of the following SAR or standard drafting team(s): | | |
| <p>If you previously worked on any NERC drafting team please identify the team(s):</p> <input type="checkbox"/> No prior NERC SAR or standard drafting team. <input type="checkbox"/> Prior experience on the following team(s): | | |
| <p>Select each NERC Region in which you have experience relevant to the Project for which you are volunteering:</p> | | |
| <input type="checkbox"/> Texas RE <input type="checkbox"/> FRCC <input type="checkbox"/> MRO | <input type="checkbox"/> NPCC <input type="checkbox"/> RF <input type="checkbox"/> SERC | <input type="checkbox"/> SPP RE <input type="checkbox"/> WECC <input type="checkbox"/> NA – Not Applicable |

Select each Industry Segment that you represent:

| | |
|--------------------------|--|
| <input type="checkbox"/> | 1 — Transmission Owners |
| <input type="checkbox"/> | 2 — RTOs, ISOs |
| <input type="checkbox"/> | 3 — Load-serving Entities |
| <input type="checkbox"/> | 4 — Transmission-dependent Utilities |
| <input type="checkbox"/> | 5 — Electric Generators |
| <input type="checkbox"/> | 6 — Electricity Brokers, Aggregators, and Marketers |
| <input type="checkbox"/> | 7 — Large Electricity End Users |
| <input type="checkbox"/> | 8 — Small Electricity End Users |
| <input type="checkbox"/> | 9 — Federal, State, and Provincial Regulatory or other Government Entities |
| <input type="checkbox"/> | 10 — Regional Reliability Organizations and Regional Entities |
| <input type="checkbox"/> | NA — Not Applicable |

Select each Function¹ in which you have current or prior expertise:

| | |
|---|--|
| <input type="checkbox"/> Balancing Authority | <input type="checkbox"/> Transmission Operator |
| <input type="checkbox"/> Compliance Enforcement Authority | <input type="checkbox"/> Transmission Owner |
| <input type="checkbox"/> Distribution Provider | <input type="checkbox"/> Transmission Planner |
| <input type="checkbox"/> Generator Operator | <input type="checkbox"/> Transmission Service Provider |
| <input type="checkbox"/> Generator Owner | <input type="checkbox"/> Purchasing-selling Entity |
| <input type="checkbox"/> Interchange Authority | <input type="checkbox"/> Reliability Coordinator |
| <input type="checkbox"/> Load-serving Entity | <input type="checkbox"/> Reliability Assurer |
| <input type="checkbox"/> Market Operator | <input type="checkbox"/> Resource Planner |
| <input type="checkbox"/> Planning Coordinator | |

¹ These functions are defined in the NERC [Functional Model](#), which is available on the NERC web site.

Provide the names and contact information for two references who could attest to your technical qualifications and your ability to work well in a group:

| | | | |
|---------------|--|------------|--|
| Name: | | Telephone: | |
| Organization: | | E-mail: | |
| Name: | | Telephone: | |
| Organization: | | E-mail: | |

Provide the name and contact information of your immediate supervisor or a member of your management who can confirm your organization's willingness to support your active participation.

| | | | |
|--------|--|------------|--|
| Name: | | Telephone: | |
| Title: | | Email: | |

Standards Announcement

Project 2017-07 Standards Alignment with Registration

Nomination Period Open through May 14, 2018

[Now Available](#)

Nominations are being sought for drafting team members for Project 2017-07 Standards Alignment with Registration through **8 p.m. Eastern, Monday, May 14, 2018.**

Use the [electronic form](#) to submit a nomination. If you experience any difficulties in using the electronic form, contact [Nasheema Santos](#). An unofficial Word version of the nomination form is posted on the [Drafting Team Vacancies](#) page and the project page.

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

The time commitment for this project is expected to be two face-to-face meetings per quarter (on average two full working days each meeting) with conference calls scheduled as needed to meet the agreed upon timeline the team sets forth. Team members may also have side projects, either individually or by sub-group, to present for discussion and review. Lastly, an important component of the team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful ballot.

Previous team experience is beneficial but not required. See the project page and nomination form for additional information.

Next Steps

The Standards Committee is expected to appoint members to the team in June 2018. Nominees will be notified shortly after they have been appointed.

For information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446- 9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower

Atlanta, GA 30326
404-446-2560 | www.nerc.com

A. Introduction

1. **Title:** Facility Interconnection Studies
2. **Number:** FAC-002-3
3. **Purpose:** To study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Transmission Owner
 - 4.1.4 Distribution Provider
 - 4.1.5 Generator Owner
 - 4.1.6 Applicable Generator Owner
 - 4.1.6.1 Generator Owner with a fully executed Agreement to conduct a study on the reliability impact of interconnecting a third party Facility to the Generator Owner's existing Facility that is used to interconnect to the Transmission system.

B. Requirements and Measures

- R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities. The following shall be studied: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
 - 1.1. The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system(s);
 - 1.2. Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
 - 1.3. Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions; and
 - 1.4. Study assumptions, system performance, alternatives considered, and coordinated recommendations. While these studies may be performed independently, the results shall be evaluated and coordinated by the entities involved.

- M1.** Each Transmission Planner or each Planning Coordinator shall have evidence (such as study reports, including documentation of reliability issues) that it met all requirements in Requirement R1.
- R2.** Each Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** Each Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R2.
- R3.** Each Transmission Owner and each Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Owner and each Distribution Provider shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R3.
- R4.** Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M4.** Each Transmission Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R4.
- R5.** Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M5.** Each applicable Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R5.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Planning Coordinator, Transmission Planner, Transmission Owner, Distribution Provider, Generator Owner and applicable Generator Owner shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for three years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Check

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|--|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities, but failed to study one of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study two of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study three of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator failed to study the reliability impact of: interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of, generation, transmission, or electricity end-user Facilities. |
| R2 | Long-term Planning | Medium | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|---|--|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator. |
| R3 | Long-term Planning | Medium | The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but | The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning | The Transmission Owner or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning | The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator. |
| R4 | Long-term Planning | Medium | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities. |
| R5 | Long-term Planning | Medium | The applicable Generator Owner coordinated and cooperated on studies with its Transmission | The applicable Generator Owner coordinated and cooperated on studies with its Transmission | The applicable Generator Owner coordinated and cooperated on studies with its Transmission | The applicable Generator Owner failed to coordinate and cooperate on studies with its |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None

Application Guidelines

Guidelines and Technical Basis

Entities should have documentation to support the technical rationale for determining whether an existing interconnection was “materially modified.” Recognizing that what constitutes a “material modification” will vary from entity to entity, the intent is for this determination to be based on engineering judgment.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|--------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | January 13, 2006 | Removed duplication of “Regional Reliability Organizations(s).” | Errata |
| 1 | August 5, 2010 | Modified to address Order No. 693 Directives contained in paragraph 693. Adopted by the NERC Board of Trustees. | Revised |
| 1 | February 7, 2013 | R2 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 1 | November 21, 2013 | R2 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2 | | Revisions to implement the recommendations of the FAC Five-Year Review Team. | Revision under Project 2010-02 |
| 2 | August 14, 2014 | Adopted by the Board of Trustees. | |
| 2 | November 6, 2014 | FERC letter order issued approving FAC-002-2. | |
| 2 | | Adopted by the Board of Trustees. | |

A. Introduction

1. **Title:** Facility Interconnection Studies
2. **Number:** FAC-002-~~32~~
3. **Purpose:** To study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Transmission Owner
 - 4.1.4 Distribution Provider
 - 4.1.5 Generator Owner
 - 4.1.6 Applicable Generator Owner
 - 4.1.6.1 Generator Owner with a fully executed Agreement to conduct a study on the reliability impact of interconnecting a third party Facility to the Generator Owner's existing Facility that is used to interconnect to the Transmission system.
 - ~~4.1.7 Load Serving Entity~~
- ~~5. **Effective Date:** The first day of the first calendar quarter that is one year after the date that this standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is one year after the date this standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

B. Requirements and Measures

- R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities. The following shall be studied:
[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]
 - 1.1. The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system(s);
 - 1.2. Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
 - 1.3. Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions; and

- 1.4. Study assumptions, system performance, alternatives considered, and coordinated recommendations. While these studies may be performed independently, the results shall be evaluated and coordinated by the entities involved.
- M1.** Each Transmission Planner or each Planning Coordinator shall have evidence (such as study reports, including documentation of reliability issues) that it met all requirements in Requirement R1.
- R2.** Each Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** Each Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R2.
- R3.** Each Transmission Owner, ~~and~~ each Distribution Provider, ~~and each Load-Serving Entity~~ seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Owner, ~~and~~ each Distribution Provider, ~~and each Load-Serving Entity~~ shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R3.
- R4.** Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M4.** Each Transmission Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R4.
- R5.** Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M5.** Each applicable Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R5.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Planning Coordinator, Transmission Planner, Transmission Owner, Distribution Provider, Generator Owner, and applicable Generator Owner, and ~~Load-Serving Entity~~ shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for three years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Check

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|--|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities, but failed to study one of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study two of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study three of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator failed to study the reliability impact of: interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of, generation, transmission, or electricity end-user Facilities. |
| R2 | Long-term Planning | Medium | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, failed to coordinate and cooperate on |

| | | | | | | |
|-----------|--------------------|--------|--|--|--|--|
| | | | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | studies with its Transmission Planner or Planning Coordinator. |
| R3 | Long-term Planning | Medium | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator. |

| | | | | | | |
|-----------|--------------------|--------|---|---|---|---|
| R4 | Long-term Planning | Medium | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities. |
| R5 | Long-term Planning | Medium | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The applicable Generator Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None

Application Guidelines

Guidelines and Technical Basis

Entities should have documentation to support the technical rationale for determining whether an existing interconnection was “materially modified.” Recognizing that what constitutes a “material modification” will vary from entity to entity, the intent is for this determination to be based on engineering judgment.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|--------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | January 13, 2006 | Removed duplication of “Regional Reliability Organizations(s). | Errata |
| 1 | August 5, 2010 | Modified to address Order No. 693 Directives contained in paragraph 693. Adopted by the NERC Board of Trustees. | Revised |
| 1 | February 7, 2013 | R2 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 1 | November 21, 2013 | R2 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2 | | Revisions to implement the recommendations of the FAC Five-Year Review Team. | Revision under Project 2010-02 |
| 2 | August 14, 2014 | Adopted by the Board of Trustees. | |
| 2 | November 6, 2014 | FERC letter order issued approving FAC-002-2. | |
| <u>2</u> | | <u>Adopted by the Board of Trustees.</u> | |

A. Introduction

1. **Title:** Reliability Coordinator Data Specification and Collection
2. **Number:** IRO-010-3
3. **Purpose:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
4. **Applicability**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
 - 4.3. Generator Owner.
 - 4.4. Generator Operator.
 - 4.5. Transmission Operator.
 - 4.6. Transmission Owner.
 - 4.7. Distribution Provider.
5. **Proposed Effective Date:**

See Implementation Plan.

B. Requirements

- R1. The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*
 - 1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data, as deemed necessary by the Reliability Coordinator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.

- M1. The Reliability Coordinator shall make available its dated, current, in force documented specification for data.

- R2.** The Reliability Coordinator shall distribute its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)
- M2.** The Reliability Coordinator shall make available evidence that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. This evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R3.** Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall satisfy the obligations of the documented specifications using: (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations*)
- 3.1** A mutually agreeable format
 - 3.2** A mutually agreeable process for resolving data conflicts
 - 3.3** A mutually agreeable security protocol
- M3.** The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Reliability Coordinator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall make available evidence that it satisfied the obligations of the documented specification using the specified criteria. Such evidence could include but is not limited to electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2 Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its dated, current, in force documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R1, Measure M1 as well as any documents in force since the last compliance audit.

The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2.

Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R3 and Measurement M3.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|----|---------------------|-----|---|---|---|---|
| | | | Lower | Moderate | High | Severe |
| R1 | Operations Planning | Low | The Reliability Coordinator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include any of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Reliability Coordinator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|---|---------------------|-----|---|--|---|--|
| | | | Lower | Moderate | High | Severe |
| | | | | | | monitoring, and Real-time Assessments. |
| <p>For the Requirement R2 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R2 | Operations Planning | Low | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, and Real-time monitoring, and Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to four or more entities, or more than 15% of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--|--------|--|--|--|--|
| | | | Lower | Moderate | High | Severe |
| | | | | Assessments. | monitoring, and Real-time Assessments. | Assessments. |
| R3 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow one of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow two of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow any of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|----------------|-------------------|--|---------------------------------|
| 1 | October 17, 2008 | Adopted by Board of Trustees | New |
| 1a | August 5, 2009 | Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees | Addition |
| 1a | March 17, 2011 | Order issued by FERC approving IRO-010-1a (approval effective 5/23/11) | |
| 1a | November 19, 2013 | Updated VRFs based on June 24, 2013 approval | |
| 2 | April 2014 | Revisions pursuant to Project 2014-03 | |
| 2 | November 13, 2014 | Adopted by NERC Board of Trustees | Revisions under Project 2014-03 |
| 2 | November 19, 2015 | FERC approved IRO-010-2. Docket No. RM15-16-000 | |
| 3 | | Adopted by NERC Board of Trustees | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT adoption, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for Applicability Changes:

Changes were made to applicability based on IRO FYRT recommendation to address the need for UVLS and UFLS information in the data specification.

The Interchange Authority was removed because activities in the Coordinate Interchange standards are performed by software systems and not a responsible entity. The software, not a functional entity, performs the task of accepting and disseminating interchange data between entities. The Balancing Authority is the responsible functional entity for these tasks.

The Planning Coordinator and Transmission Planner were removed from Draft 2 as those entities would not be involved in a data specification concept as outlined in this standard.

Rationale:

Proposed Requirement R1, Part 1.1:

Is in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Reliability Coordinator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2:

Is in response to NOPR paragraph 78 on relay data.

Proposed Requirement R3, Part 3.3:

Is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Corresponding changes have been made to proposed TOP-003-3.

A. Introduction

1. **Title:** Reliability Coordinator Data Specification and Collection
2. **Number:** IRO-010-~~32~~
3. **Purpose:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
4. **Applicability**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
 - 4.3. Generator Owner.
 - 4.4. Generator Operator.
 - ~~4.5. Load Serving Entity.~~
 - ~~4.6.4.5.~~ _____ Transmission Operator.
 - ~~4.7.4.6.~~ _____ Transmission Owner.
 - ~~4.8.4.7.~~ _____ Distribution Provider.
5. **Proposed Effective Date:**

See Implementation Plan.
- ~~6. Background~~

~~See Project 2014-03 [project page](#).~~

B. Requirements

- R1. The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*
 - 1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data, as deemed necessary by the Reliability Coordinator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.

- M1.** The Reliability Coordinator shall make available its dated, current, in force documented specification for data.
- R2.** The Reliability Coordinator shall distribute its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)
- M2.** The Reliability Coordinator shall make available evidence that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. This evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R3.** Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall satisfy the obligations of the documented specifications using: (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations*)
- 3.1** A mutually agreeable format
 - 3.2** A mutually agreeable process for resolving data conflicts
 - 3.3** A mutually agreeable security protocol
- M3.** The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Reliability Coordinator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall make available evidence that it satisfied the obligations of the documented specification using the specified criteria. Such evidence could include but is not limited to electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2 Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate

data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load Serving Entity~~, Transmission Operator, ~~Transmission Owner~~, and Distribution Provider shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its dated, current, in force documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R1, Measure M1 as well as any documents in force since the last compliance audit.

The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its data specification to entities that have data required by the Reliability Coordinator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2.

Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Interchange Authority~~, ~~Load Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R3 and Measurement M3.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|----|---------------------|-----|---|---|---|---|
| | | | Lower | Moderate | High | Severe |
| R1 | Operations Planning | Low | The Reliability Coordinator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include any of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Reliability Coordinator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|---|---------------------|-----|---|--|---|--|
| | | | Lower | Moderate | High | Severe |
| | | | | | | monitoring, and Real-time Assessments. |
| <p>For the Requirement R2 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R2 | Operations Planning | Low | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, and Real-time monitoring, and Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to four or more entities, or more than 15% of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--|--------|--|--|--|--|
| | | | Lower | Moderate | High | Severe |
| | | | | Assessments. | monitoring, and Real-time Assessments. | Assessments. |
| R3 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow one of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow two of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow any of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None

E. Interpretations

None _____

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|---------------------------------|
| 1 | October 17, 2008 | Adopted by Board of Trustees | New |
| 1a | August 5, 2009 | Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees | Addition |
| 1a | March 17, 2011 | Order issued by FERC approving IRO-010-1a (approval effective 5/23/11) | |
| 1a | November 19, 2013 | Updated VRFs based on June 24, 2013 approval | |
| 2 | April 2014 | Revisions pursuant to Project 2014-03 | |
| 2 | November 13, 2014 | Adopted by NERC Board of Trustees | Revisions under Project 2014-03 |
| 2 | November 19, 2015 | FERC approved IRO-010-2. Docket No. RM15-16-000 | |
| <u>3</u> | | <u>Adopted by NERC Board of Trustees</u> | |

Guidelines and Technical Basis

Rationale:

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Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

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The Planning Coordinator and Transmission Planner were removed from Draft 2 as those entities would not be involved in a data specification concept as outlined in this standard.

Rationale:

Proposed Requirement R1, Part 1.1:

Is in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Reliability Coordinator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2:

Is in response to NOPR paragraph 78 on relay data.

Proposed Requirement R3, Part 3.3:

Standard IRO-010-3 — Reliability Coordinator Data Specification and Collection
Standard IRO-010-2 — Guidelines and Technical Basis

Is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Corresponding changes have been made to proposed TOP-003-3.

A. Introduction

1. **Title: Demand and Energy Data**
2. **Number: MOD-031-3**
3. **Purpose:** To provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Balancing Authority
 - 4.1.4 Resource Planner
 - 4.1.5 Distribution Provider

5. **Effective Date**

- 5.1. See Implementation Plan.

6. **Background:**

To ensure that various forms of historical and forecast Demand and energy data and information is available to the parties that perform reliability studies and assessments, authority is needed to collect the applicable data.

The collection of Demand, Net Energy for Load and Demand Side Management data requires coordination and collaboration between Planning Coordinators, Transmission and Resource Planners, and Distribution Providers. Ensuring that planners and operators have access to complete and accurate load forecasts – as well as the supporting methods and assumptions used to develop these forecasts – enhances the reliability of the Bulk Electric System. Consistent documenting and information sharing activities will also improve efficient planning practices and support the identification of needed system reinforcements. Furthermore, collection of actual Demand and Demand Side Management performance during the prior year will allow for comparison to prior forecasts and further contribute to enhanced accuracy of load forecasting practices.

Data provided under this standard is generally considered confidential by Planning Coordinators and Balancing Authorities receiving the data. Furthermore, data reported to a Regional Entity is subject to the confidentiality provisions in Section 1500 of the North American Electric Reliability Corporation Rules of Procedure and is typically aggregated with data of other functional entities in a non-attributable manner. While this standard allows for the sharing of data necessary to perform certain reliability studies and assessments, any data received under this standard for

which an applicable entity has made a claim of confidentiality should be maintained as confidential by the receiving entity.

B. Requirements and Measures

- R1.** Each Planning Coordinator or Balancing Authority that identifies a need for the collection of Total Internal Demand, Net Energy for Load, and Demand Side Management data shall develop and issue a data request to the applicable entities in its area. The data request shall include: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data (“Applicable Entities”).
 - 1.2.** A timetable for providing the data. (A minimum of 30 calendar days must be allowed for responding to the request).
 - 1.3.** A request to provide any or all of the following actual data, as necessary:
 - 1.3.1.** Integrated hourly Demands in megawatts for the prior calendar year.
 - 1.3.2.** Monthly and annual integrated peak hour Demands in megawatts for the prior calendar year.
 - 1.3.2.1.** If the annual peak hour actual Demand varies due to weather-related conditions (e.g., temperature, humidity or wind speed), the Applicable Entity shall also provide the weather normalized annual peak hour actual Demand for the prior calendar year.
 - 1.3.3.** Monthly and annual Net Energy for Load in gigawatthours for the prior calendar year.
 - 1.3.4.** Monthly and annual peak hour controllable and dispatchable Demand Side Management under the control or supervision of the System Operator in megawatts for the prior calendar year. Three values shall be reported for each hour: 1) the committed megawatts (the amount under control or supervision), 2) the dispatched megawatts (the amount, if any, activated for use by the System Operator), and 3) the realized megawatts (the amount of actual demand reduction).
 - 1.4.** A request to provide any or all of the following forecast data, as necessary:
 - 1.4.1.** Monthly peak hour forecast Total Internal Demands in megawatts for the next two calendar years.
 - 1.4.2.** Monthly forecast Net Energy for Load in gigawatthours for the next two calendar years.
 - 1.4.3.** Peak hour forecast Total Internal Demands (summer and winter) in megawatts for ten calendar years into the future.

- R4.** Any Applicable Entity shall, in response to a written request for the data included in parts 1.3-1.5 of Requirement R1 from a Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner with a demonstrated need for such data in order to conduct reliability assessments of the Bulk Electric System, provide or otherwise make available that data to the requesting entity. This requirement does not modify an entity's obligation pursuant to Requirement R2 to respond to data requests issued by its Planning Coordinator or Balancing Authority pursuant to Requirement R1. Unless otherwise agreed upon, the Applicable Entity: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- shall not be required to alter the format in which it maintains or uses the data;
 - shall provide the requested data within 45 calendar days of the written request, subject to part 4.1 of this requirement; unless providing the requested data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements
- 4.1.** If the Applicable Entity does not provide data requested because (1) the requesting entity did not demonstrate a reliability need for the data; or (2) providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements, the Applicable Entity shall, within 30 calendar days of the written request, provide a written response to the requesting entity specifying the data that is not being provided and on what basis.
- M4.** Each Applicable Entity identified in Requirement R4 shall have evidence such as dated e-mails or dated transmittal letters that it provided the data requested or provided a written response specifying the data that is not being provided and the basis for not providing the data in accordance with Requirement R4.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R4, and Measures M1 through M4, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

- Compliance Audit
- Self-Certification
- Spot Checking
- Compliance Investigation
- Self-Reporting
- Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | N/A | N/A | N/A | The Planning Coordinator or Balancing Authority developed and issued a data request but failed to include either the entity(s) necessary to provide the data or the timetable for providing the data. |
| R2 | Long-term Planning | Medium | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide all of the data requested in Requirement R1 part 1.5.1 through part 1.5.5</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.4.1 through part 1.4.5</p> |

| | | | | | | |
|----|--------------------|--------|--|--|---|---|
| | | | <p>did so after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 15 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>OR The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide the data requested in the timetable provided pursuant to Requirement R1 prior to 16 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> |
| R3 | Long-term Planning | Medium | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 75 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 80 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 85 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, failed to make available the data requested prior to 91 days</p> |

| | | | | | | |
|----|--------------------|--------|---|---|---|---|
| | | | from the date of request but prior to 81 days from the date of the request. | from the date of request but prior to 86 days from the date of the request. | from the date of request but prior to 91 days from the date of the request. | or more from the date of the request. |
| R4 | Long-term Planning | Medium | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 45 days from the date of request but prior to 51 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 30 days of the written request but prior to 36 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 50 days from the date of request but prior to 56 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 35 days of the written request but prior to 41 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 55 days from the date of request but prior to 61 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 40 days of the written request but prior to 46 days of the written request.</p> | <p>The Applicable Entity failed to provide or otherwise make available the data to the requesting entity within 60 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested failed to provide a written response specifying the data that is not being provided and on what basis within 45 days of the written request.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|---|-----------------|
| 1 | May 6, 2014 | Adopted by the NERC Board of Trustees | |
| 1 | February 19, 2015 | FERC order approving MOD-031-1 | |
| 2 | November 5, 2015 | Adopted by the NERC Board of Trustees | |
| 2 | February 18, 2016 | FERC order approving MOD-031-2. Docket No. RD16-1-000 | |
| 3 | | Adopted by the NERC Board of Trustees | |

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

Rationale for R1: To ensure that when Planning Coordinators (PCs) or Balancing Authorities (BAs) request data (R1), they identify the entities that must provide the data (Applicable Entity in part 1.1), the data to be provided (parts 1.3 – 1.5) and the due dates (part 1.2) for the requested data.

For Requirement R1 part 1.3.2.1, if the Demand does not vary due to weather-related conditions (e.g., temperature, humidity or wind speed), or the weather assumed in the forecast was the same as the actual weather, the weather normalized actual Demand will be the same as the actual demand reported for Requirement R1 part 1.3.2. Otherwise the annual peak hour weather normalized actual Demand will be different from the actual demand reported for Requirement R1 part 1.3.2.

Balancing Authorities are included here to reflect a practice in the WECC Region where BAs are the entity that perform this requirement in lieu of the PC.

Rationale for R2:

This requirement will ensure that entities identified in Requirement R1, as responsible for providing data, provide the data in accordance with the details described in the data request developed in accordance with Requirement R1. In no event shall the Applicable Entity be required to provide data under this requirement that is outside the scope of parts 1.3 - 1.5 of Requirement R1.

Rationale for R3:

This requirement will ensure that the Planning Coordinator or when applicable, the Balancing Authority, provides the data requested by the Regional Entity.

Rationale for R4:

This requirement will ensure that the Applicable Entity will make the data requested by the Planning Coordinator or Balancing Authority in Requirement R1 available to other applicable entities (Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner) unless providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements. The sharing of documentation of the supporting methods and assumptions used to develop forecasts as well as information-sharing activities will improve the efficiency of planning practices and support the identification of needed system reinforcements.

The obligation to share data under Requirement R4 does not supersede or otherwise modify any of the Applicable Entity's existing confidentiality obligations. For instance, if an entity is prohibited from providing any of the requested data pursuant to confidentiality provisions of an Open Access Transmission Tariff or a contractual arrangement, Requirement R4 does not

require the Applicable Entity to provide the data to a requesting entity. Rather, under Part 4.1, the Applicable Entity must simply provide written notification to the requesting entity that it will not be providing the data and the basis for not providing the data. If the Applicable Entity is subject to confidentiality obligations that allow the Applicable Entity to share the data only if certain conditions are met, the Applicable Entity shall ensure that those conditions are met within the 45-day time period provided in Requirement R4, communicate with the requesting entity regarding an extension of the 45-day time period so as to meet all those conditions, or provide justification under Part 4.1 as to why those conditions cannot be met under the circumstances.

A. Introduction

1. **Title: Demand and Energy Data**
2. **Number: MOD-031-~~2~~3**
3. **Purpose:** To provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.
4. **Applicability:**

4.1. Functional Entities:

~~4.1.1 Planning Authority and Planning Coordinator (hereafter collectively referred to as the “Planning Coordinator”)~~

~~4.1.1 This proposed standard combines “Planning Authority” with “Planning Coordinator” in the list of applicable functional entities. The NERC Functional Model lists “Planning Coordinator” while the registration criteria list “Planning Authority,” and they are not yet synchronized. Until that occurs, the proposed standard applies to both “Planning Authority” and “Planning Coordinator.”~~

4.1.2 Transmission Planner

4.1.3 Balancing Authority

4.1.4 Resource Planner

~~4.1.5 Load Serving Entity~~

~~4.1.6~~4.1.5 Distribution Provider

5. Effective Date

5.1. See ~~the MOD-031-2~~ Implementation Plan.

6. Background:

To ensure that various forms of historical and forecast Demand and energy data and information is available to the parties that perform reliability studies and assessments, authority is needed to collect the applicable data.

The collection of Demand, Net Energy for Load and Demand Side Management data requires coordination and collaboration between ~~Planning Authorities~~ (Planning Coordinators), Transmission and Resource Planners, ~~Load Serving Entities~~ and Distribution Providers. Ensuring that planners and operators have access to complete and accurate load forecasts – as well as the supporting methods and assumptions used to develop these forecasts – enhances the reliability of the Bulk Electric System. Consistent documenting and information sharing activities will also improve efficient planning practices and support the identification of needed system reinforcements. Furthermore, collection of actual Demand and Demand Side Management

performance during the prior year will allow for comparison to prior forecasts and further contribute to enhanced accuracy of load forecasting practices.

Data provided under this standard is generally considered confidential by Planning Coordinators and Balancing Authorities receiving the data. Furthermore, data reported to a Regional Entity is subject to the confidentiality provisions in Section 1500 of the North American Electric Reliability Corporation Rules of Procedure and is typically aggregated with data of other functional entities in a non-attributable manner. While this standard allows for the sharing of data necessary to perform certain reliability studies and assessments, any data received under this standard for which an applicable entity has made a claim of confidentiality should be maintained as confidential by the receiving entity.

B. Requirements and Measures

- R1.** Each Planning Coordinator or Balancing Authority that identifies a need for the collection of Total Internal Demand, Net Energy for Load, and Demand Side Management data shall develop and issue a data request to the applicable entities in its area. The data request shall include: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** A list of Transmission Planners, Balancing Authorities, ~~Load Serving Entities~~, and Distribution Providers that are required to provide the data (“Applicable Entities”).
 - 1.2.** A timetable for providing the data. (A minimum of 30 calendar days must be allowed for responding to the request).
 - 1.3.** A request to provide any or all of the following actual data, as necessary:
 - 1.3.1.** Integrated hourly Demands in megawatts for the prior calendar year.
 - 1.3.2.** Monthly and annual integrated peak hour Demands in megawatts for the prior calendar year.
 - 1.3.2.1.** If the annual peak hour actual Demand varies due to weather-related conditions (e.g., temperature, humidity or wind speed), the Applicable Entity shall also provide the weather normalized annual peak hour actual Demand for the prior calendar year.
 - 1.3.3.** Monthly and annual Net Energy for Load in gigawatthours for the prior calendar year.
 - 1.3.4.** Monthly and annual peak hour controllable and dispatchable Demand Side Management under the control or supervision of the System Operator in megawatts for the prior calendar year. Three values shall be reported for each hour: 1) the committed megawatts (the amount under control or supervision), 2) the dispatched megawatts (the amount, if any,

activated for use by the System Operator), and 3) the realized megawatts (the amount of actual demand reduction).

- 1.4.** A request to provide any or all of the following forecast data, as necessary:
 - 1.4.1.** Monthly peak hour forecast Total Internal Demands in megawatts for the next two calendar years.
 - 1.4.2.** Monthly forecast Net Energy for Load in gigawatthours for the next two calendar years.
 - 1.4.3.** Peak hour forecast Total Internal Demands (summer and winter) in megawatts for ten calendar years into the future.
 - 1.4.4.** Annual forecast Net Energy for Load in gigawatthours for ten calendar years into the future.
 - 1.4.5.** Total and available peak hour forecast of controllable and dispatchable Demand Side Management (summer and winter), in megawatts, under the control or supervision of the System Operator for ten calendar years into the future.
- 1.5.** A request to provide any or all of the following summary explanations, as necessary:
 - 1.5.1.** The assumptions and methods used in the development of aggregated Peak Demand and Net Energy for Load forecasts.
 - 1.5.2.** The Demand and energy effects of controllable and dispatchable Demand Side Management under the control or supervision of the System Operator.
 - 1.5.3.** How Demand Side Management is addressed in the forecasts of its Peak Demand and annual Net Energy for Load.
 - 1.5.4.** How the controllable and dispatchable Demand Side Management forecast compares to actual controllable and dispatchable Demand Side Management for the prior calendar year and, if applicable, how the assumptions and methods for future forecasts were adjusted.
 - 1.5.5.** How the peak Demand forecast compares to actual Demand for the prior calendar year with due regard to any relevant weather-related variations (e.g., temperature, humidity, or wind speed) and, if applicable, how the assumptions and methods for future forecasts were adjusted.
- M1.** The Planning Coordinator or Balancing Authority shall have a dated data request, either in hardcopy or electronic format, in accordance with Requirement R1.
- R2.** Each Applicable Entity identified in a data request shall provide the data requested by its Planning Coordinator or Balancing Authority in accordance with the data request issued pursuant to Requirement R1. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*

- M2.** Each Applicable Entity shall have evidence, such as dated e-mails or dated transmittal letters that it provided the requested data in accordance with Requirement R2.
- R3.** The Planning Coordinator or the Balancing Authority shall provide the data listed under Requirement R1 Parts 1.3 through 1.5 for their area to the applicable Regional Entity within 75 calendar days of receiving a request for such data, unless otherwise agreed upon by the parties. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Planning Coordinator or Balancing Authority, shall have evidence, such as dated e-mails or dated transmittal letters that it provided the data requested by the applicable Regional Entity in accordance with Requirement R3.
- R4.** Any Applicable Entity shall, in response to a written request for the data included in parts 1.3-1.5 of Requirement R1 from a Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner with a demonstrated need for such data in order to conduct reliability assessments of the Bulk Electric System, provide or otherwise make available that data to the requesting entity. This requirement does not modify an entity's obligation pursuant to Requirement R2 to respond to data requests issued by its Planning Coordinator or Balancing Authority pursuant to Requirement R1. Unless otherwise agreed upon, the Applicable Entity: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- shall not be required to alter the format in which it maintains or uses the data;
 - shall provide the requested data within 45 calendar days of the written request, subject to part 4.1 of this requirement; unless providing the requested data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements
- 4.1.** If the Applicable Entity does not provide data requested because (1) the requesting entity did not demonstrate a reliability need for the data; or (2) providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements, the Applicable Entity shall, within 30 calendar days of the written request, provide a written response to the requesting entity specifying the data that is not being provided and on what basis.
- M4.** Each Applicable Entity identified in Requirement R4 shall have evidence such as dated e-mails or dated transmittal letters that it provided the data requested or provided a written response specifying the data that is not being provided and the basis for not providing the data in accordance with Requirement R4.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R4, and Measures M1 through M4, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

- Compliance Audit
- Self-Certification
- Spot Checking
- Compliance Investigation
- Self-Reporting
- Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | N/A | N/A | N/A | The Planning Coordinator or Balancing Authority developed and issued a data request but failed to include either the entity(s) necessary to provide the data or the timetable for providing the data. |
| R2 | Long-term Planning | Medium | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide all of the data requested in Requirement R1 part 1.5.1 through part 1.5.5</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.4.1 through part 1.4.5</p> |

| | | | | | | |
|----|--------------------|--------|--|--|---|---|
| | | | <p>did so after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 15 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>OR The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide the data requested in the timetable provided pursuant to Requirement R1 prior to 16 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> |
| R3 | Long-term Planning | Medium | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 75 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 80 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 85 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, failed to make available the data requested prior to 91 days</p> |

| | | | | | | |
|----|--------------------|--------|---|---|---|---|
| | | | from the date of request but prior to 81 days from the date of the request. | from the date of request but prior to 86 days from the date of the request. | from the date of request but prior to 91 days from the date of the request. | or more from the date of the request. |
| R4 | Long-term Planning | Medium | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 45 days from the date of request but prior to 51 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 30 days of the written request but prior to 36 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 50 days from the date of request but prior to 56 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 35 days of the written request but prior to 41 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 55 days from the date of request but prior to 61 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 40 days of the written request but prior to 46 days of the written request.</p> | <p>The Applicable Entity failed to provide or otherwise make available the data to the requesting entity within 60 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested failed to provide a written response specifying the data that is not being provided and on what basis within 45 days of the written request.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|---|-----------------|
| 1 | May 6, 2014 | Adopted by the NERC Board of Trustees | |
| 1 | February 19, 2015 | FERC order approving MOD-031-1 | |
| 2 | November 5, 2015 | Adopted by the NERC Board of Trustees | |
| 2 | February 18, 2016 | FERC order approving MOD-031-2. Docket No. RD16-1-000 | |
| <u>3</u> | | <u>Adopted by the NERC Board of Trustees</u> | |

Application Guidelines

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

Rationale for R1: To ensure that when Planning Coordinators (PCs) or Balancing Authorities (BAs) request data (R1), they identify the entities that must provide the data (Applicable Entity in part 1.1), the data to be provided (parts 1.3 – 1.5) and the due dates (part 1.2) for the requested data.

For Requirement R1 part 1.3.2.1, if the Demand does not vary due to weather-related conditions (e.g., temperature, humidity or wind speed), or the weather assumed in the forecast was the same as the actual weather, the weather normalized actual Demand will be the same as the actual demand reported for Requirement R1 part 1.3.2. Otherwise the annual peak hour weather normalized actual Demand will be different from the actual demand reported for Requirement R1 part 1.3.2.

Balancing Authorities are included here to reflect a practice in the WECC Region where BAs are the entity that perform this requirement in lieu of the PC.

Rationale for R2:

This requirement will ensure that entities identified in Requirement R1, as responsible for providing data, provide the data in accordance with the details described in the data request developed in accordance with Requirement R1. In no event shall the Applicable Entity be required to provide data under this requirement that is outside the scope of parts 1.3 - 1.5 of Requirement R1.

Rationale for R3:

This requirement will ensure that the Planning Coordinator or when applicable, the Balancing Authority, provides the data requested by the Regional Entity.

Rationale for R4:

This requirement will ensure that the Applicable Entity will make the data requested by the Planning Coordinator or Balancing Authority in Requirement R1 available to other applicable entities (Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner) unless providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements. The sharing of documentation of the supporting methods and assumptions used to develop forecasts as well as information-sharing activities will improve the efficiency of planning practices and support the identification of needed system reinforcements.

The obligation to share data under Requirement R4 does not supersede or otherwise modify any of the Applicable Entity's existing confidentiality obligations. For instance, if an entity is prohibited from providing any of the requested data pursuant to confidentiality provisions of an Open Access Transmission Tariff or a contractual arrangement, Requirement R4 does not

Application Guidelines

require the Applicable Entity to provide the data to a requesting entity. Rather, under Part 4.1, the Applicable Entity must simply provide written notification to the requesting entity that it will not be providing the data and the basis for not providing the data. If the Applicable Entity is subject to confidentiality obligations that allow the Applicable Entity to share the data only if certain conditions are met, the Applicable Entity shall ensure that those conditions are met within the 45-day time period provided in Requirement R4, communicate with the requesting entity regarding an extension of the 45-day time period so as to meet all those conditions, or provide justification under Part 4.1 as to why those conditions cannot be met under the circumstances.

A. Introduction

1. **Title: Steady-State and Dynamic System Model Validation**
2. **Number: MOD-033-2**
3. **Purpose:** To establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Reliability Coordinator
 - 4.1.3 Transmission Operator
5. **Effective Date:**

See Implementation Plan.

B. Requirements and Measures

- R1.** Each Planning Coordinator shall implement a documented data validation process that includes the following attributes: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
 - 1.2.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
 - 1.3.** Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and
 - 1.4.** Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.
- M1.** Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.
- R2.** Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation. *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*
- M2.** Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

“Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The applicable entity shall keep data or evidence to show compliance with Requirements R1 through R2, and Measures M1 through M2, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an applicable entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Refer to Section 3.0 of Appendix 4C of the NERC Rules of Procedure for a list of compliance monitoring and assessment processes.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | <p>The Planning Coordinator documented and implemented a process to validate data but did not address one of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation within 28 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address two of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address three of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator did not have a validation process at all or did not document or implement any of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not validate its portion of the system in the power flow model as required by part 1.1 within 36 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.2 within 36 calendar</p> |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|---------------------------|--------------|---|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation within 28 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months. | months (or the next dynamic local event in cases where there is more than 24 months between events). |
| R2 | Long-term Planning | Lower | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in less than or equal to 45 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 45 calendar days but less than or equal to 60 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 60 calendar days but less than or equal to 75 calendar days. | Coordinator within 75 calendar days; OR The Reliability Coordinator or Transmission Operator provided a written response that it does not have the requested data, but actually had the data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Guidelines and Technical Basis

Requirement R1:

The requirement focuses on the results-based outcome of developing a process for and performing a validation, but does not prescribe a specific method or procedure for the validation outside of the attributes specified in the requirement. For further information on suggested validation procedures, see “Procedures for Validation of Powerflow and Dynamics Cases” produced by the NERC Model Working Group.

The specific process is left to the judgment of the Planning Coordinator, but the Planning Coordinator is required to develop and include in its process guidelines for evaluating discrepancies between actual system behavior or response and expected system performance for determining whether the discrepancies are unacceptable.

For the validation in part 1.1, the state estimator case or other Real-time data should be taken as close to system peak as possible. However, other snapshots of the system could be used if deemed to be more appropriate by the Planning Coordinator. While the requirement specifies “once every 24 calendar months,” entities are encouraged to perform the comparison on a more frequent basis.

In performing the comparison required in part 1.1, the Planning Coordinator may consider, among other criteria:

1. System load;
2. Transmission topology and parameters;
3. Voltage at major buses; and
4. Flows on major transmission elements.

The validation in part 1.1 would include consideration of the load distribution and load power factors (as applicable) used in the power flow models. The validation may be made using metered load data if state estimator cases are not available. The comparison of system load distribution and load power factors shall be made on an aggregate company or power flow zone level at a minimum but may also be made on a bus by bus, load pocket (e.g., within a Balancing Authority), or smaller area basis as deemed appropriate by the Planning Coordinator.

The scope of dynamics model validation is intended to be limited, for purposes of part 1.2, to the Planning Coordinator’s planning area, and the intended emphasis under the requirement is on local events or local phenomena, not the whole Interconnection.

The validation required in part 1.2 may include simulations that are to be compared with actual system data and may include comparisons of:

- Voltage oscillations at major buses
- System frequency (for events with frequency excursions)
- Real and reactive power oscillations on generating units and major inter-area ties

Determining when a dynamic local event might occur may be unpredictable, and because of the analytic complexities involved in simulation, the time parameters in part 1.2 specify that the comparison period of “at least once every 24 calendar months” is intended to both provide for at least 24 months between dynamic local events used in the comparisons and that comparisons must be completed within 24 months of the date of the dynamic local event used. This clarification ensures that PCs will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison. With the 30 day timeframe in Requirement R2 for TOPs or RCs to provide actual system behavior data (if necessary in the comparison), it would potentially be impossible to complete the comparison within the 24 month timeframe.

In contrast, the requirement language clarifies that the time frame between dynamic local events used in the comparisons should be within 24 months of each other (or, as specified at the end of part 1.2, in the event more than 24 months passes before the next dynamic local event, the comparison should use the next dynamic local event that occurs). Each comparison must be completed within 24 months of the dynamic local event used. In this manner, the potential problem with a “month 23” dynamic local event described above is resolved. For example, if a PC uses for comparison a dynamic local event occurring on day 1 of month 1, the PC has 24 calendar months from that dynamic local event’s occurrence to complete the comparison. If the next dynamic event the PC chooses for comparison occurs in month 23, the PC has 24 months from that dynamic local event’s occurrence to complete the comparison.

Part 1.3 requires the PC to include guidelines in its documented validation process for determining when discrepancies in the comparison of simulation results with actual system results are unacceptable. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both. For the power flow comparison, as an example, this could include a guideline the Planning Coordinator will use that flows on 500 kV lines should be within 10% or 100 MW, whichever is larger. It could be different percentages or MW amounts for different voltage levels. Or, as another example, the guideline for voltage comparisons could be that it must be within 1%. But the guidelines the PC includes within its documented validation process should be meaningful for the Planning Coordinator’s system. Guidelines for the dynamic event comparison may be less precise. Regardless, the comparison should indicate that the conclusions drawn from the two results should be consistent. For example, the guideline could state that the simulation result will be plotted on the same graph as the actual system response. Then the two plots could be given a visual inspection to see if they look similar or not. Or a guideline could be defined such that the rise time of the transient response in the simulation should be within 20% of the rise time of the actual system response. As for the power flow guidelines, the dynamic comparison criteria should be meaningful for the Planning Coordinator’s system.

The guidelines the PC includes in its documented validation process to resolve differences in Part 1.4 could include direct coordination with the data owner, and, if necessary, through the provisions of MOD-032-1, Requirement R3 (i.e., the validation performed under this requirement could identify technical concerns with the data). In other words, while this standard is focused on validation, results of the validation may identify data provided under the

modeling data standard that needs to be corrected. If a model with estimated data or a generic model is used for a generator, and the model response does not match the actual response, then the estimated data should be corrected or a more detailed model should be requested from the data provider.

While the validation is focused on the Planning Coordinator's planning area, the model for the validation should be one that contains a wider area of the Interconnection than the Planning Coordinator's area. If the simulations can be made to match the actual system responses by reasonable changes to the data in the Planning Coordinator's area, then the Planning Coordinator should make those changes in coordination with the data provider. However, for some disturbances, the data in the Planning Coordinator's area may not be what is causing the simulations to not match actual responses. These situations should be reported to the Electric Reliability Organization (ERO). The guidelines the Planning Coordinator includes under Part 1.4 could cover these situations.

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

In FERC Order No. 693, paragraph 1210, the Commission directed inclusion of "a requirement that the models be validated against actual system responses." Furthermore, the Commission directs in paragraph 1211, "that actual system events be simulated and if the model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy." Paragraph 1220 similarly directs validation against actual system responses relative to dynamics system models. In FERC Order 890, paragraph 290, the Commission states that "the models should be updated and benchmarked to actual events." Requirement R1 addresses these directives.

Requirement R1 requires the Planning Coordinator to implement a documented data validation process to validate data in the Planning Coordinator's portion of the existing system in the steady-state and dynamic models to compare performance against expected behavior or response, which is consistent with the Commission directives. The validation of the full Interconnection-wide cases is left up to the Electric Reliability Organization (ERO) or its designees, and is not addressed by this standard. The following items were chosen for the validation requirement:

- A. Comparison of performance of the existing system in a planning power flow model to actual system behavior; and
- B. Comparison of the performance of the existing system in a planning dynamics model to actual system response.

Implementation of these validations will result in more accurate power flow and dynamic models. This, in turn, should result in better correlation between system flows and voltages

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seen in power flow studies and the actual values seen by system operators during outage conditions. Similar improvements should be expected for dynamics studies, such that the results will more closely match the actual responses of the power system to disturbances.

Validation of model data is a good utility practice, but it does not easily lend itself to Reliability Standards requirement language. Furthermore, it is challenging to determine specifications for thresholds of disturbances that should be validated and how they are determined. Therefore, this requirement focuses on the Planning Coordinator performing validation pursuant to its process, which must include the attributes listed in parts 1.1 through 1.4, without specifying the details of “how” it must validate, which is necessarily dependent upon facts and circumstances. Other validations are best left to guidance rather than standard requirements.

Rationale for R2:

The Planning Coordinator will need actual system behavior data in order to perform the validations required in R1. The Reliability Coordinator or Transmission Operator may have this data. Requirement R2 requires the Reliability Coordinator and Transmission Operator to supply actual system data, if it has the data, to any requesting Planning Coordinator for purposes of model validation under Requirement R1.

This could also include information the Reliability Coordinator or Transmission Operator has at a field site. For example, if a PMU or DFR is at a generator site and it is recording the disturbance, the Reliability Coordinator or Transmission Operator would typically have that data.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|---|
| 1 | February 6, 2014 | Adopted by the NERC Board of Trustees. | Developed as a new standard for system validation to address outstanding directives from FERC Order No. 693 and recommendations from several other sources. |
| 1 | May 1, 2014 | FERC Order issued approving MOD-033-1. | |
| 2 | | Adopted by the NERC Board of Trustees. | |

A. Introduction

1. **Title:** Steady-State and Dynamic System Model Validation
2. **Number:** MOD-033-21
3. **Purpose:** To establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.

4. **Applicability:**

- 4.1. **Functional Entities:**

- ~~4.1.1 — Planning Authority and Planning Coordinator (hereafter referred to as “Planning Coordinator”)~~

- ~~4.1.24.1.1 This proposed standard combines “Planning Authority” with “Planning Coordinator” in the list of applicable functional entities. The NERC Functional Model lists “Planning Coordinator” while the registration criteria list “Planning Authority,” and they are not yet synchronized. Until that occurs, the proposed standard applies to both Planning Authority and Planning Coordinator.~~

- ~~4.1.34.1.2 Reliability Coordinator~~

- ~~4.1.44.1.3 Transmission Operator~~

5. **Effective Date:**

~~MOD-033-1 shall become effective on the first day of the first calendar quarter that is 36 months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is 36 months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction. See Implementation Plan.~~

- ~~6. **Background:**~~

~~MOD-033-1 exists in conjunction with MOD-032-1, both of which are related to system-level modeling and validation. Reliability Standard MOD-032-1 is a consolidation and replacement of existing MOD-010-0, MOD-011-0, MOD-012-0, MOD-013-1, MOD-014-0, and MOD-015-0.1, and it requires data submission by applicable data owners to their respective Transmission Planners and Planning Coordinators to support the Interconnection-wide case building process in their Interconnection. Reliability Standard MOD-033-1 is a new standard, and it requires each Planning Coordinator to implement a documented process to perform model validation within its planning area.~~

~~The transition and focus of responsibility upon the Planning Coordinator function in both standards are driven by several recommendations and FERC directives (to include several remaining directives from FERC Order No. 693), which are discussed in greater detail in the rationale sections of the standards. One of the most recent and significant set of recommendations came from the NERC Planning Committee's System Analysis and Modeling Subcommittee (SAMS). SAMS proposed several improvements to the modeling data standards, to include consolidation of the standards (that whitepaper is available from the December 2012 NERC Planning Committee's agenda package, item 3.4, beginning on page 99, here: <http://www.nerc.com/comm/PC/Agendas%20Highlights%20and%20Minutes%20DL/2012/2012-Dec-PC%20Agenda.pdf>).~~

~~The focus of validation in this standard is not Interconnection-wide phenomena, but on the Planning Coordinator's portion of the existing system. The Reliability Standard requires Planning Coordinators to implement a documented data validation process for power flow and dynamics. For the dynamics validation, the target of validation is those events that the Planning Coordinator determines are dynamic local events. A dynamic local event could include such things as closing a transmission line near a generating plant. A dynamic local event is a disturbance on the power system that produces some measurable transient response, such as oscillations. It could involve one small area of the system or a generating plant oscillating against the rest of the grid. The rest of the grid should not have a significant effect. Oscillations involving large areas of the grid are not local events. However, a dynamic local event could also be a subset of a larger disturbance involving large areas of the grid.~~

B. Requirements and Measures

- R1.** Each Planning Coordinator shall implement a documented data validation process that includes the following attributes: [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning*]
- 1.1.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
 - 1.2.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
 - 1.3.** Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and

1.4. Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.

- M1.** Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.
- R2.** Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation. [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]
- M2.** Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

“Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The applicable entity shall keep data or evidence to show compliance with Requirements R1 through R2, and Measures M1 through M2, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an applicable entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Refer to Section 3.0 of Appendix 4C of the NERC Rules of Procedure for a list of compliance monitoring and assessment processes.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|---------------------------|---------------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | <p>The Planning Coordinator documented and implemented a process to validate data but did not address one of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation within 28 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address two of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address three of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator did not have a validation process at all or did not document or implement any of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not validate its portion of the system in the power flow model as required by part 1.1 within 36 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.2 within 36 calendar</p> |

| | | | | | | |
|-----------|---------------------------|--------------|--|--|--|---|
| | | | required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation within 28 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months. | months (or the next dynamic local event in cases where there is more than 24 months between events). |
| R2 | Long-term Planning | Lower | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 75 calendar days; |

| | | | | | | |
|--|--|--|--|--|--|---|
| | | | did provide the data (or written response that it does not have the requested data) in less than or equal to 45 calendar days. | did provide the data (or written response that it does not have the requested data) in greater than 45 calendar days but less than or equal to 60 calendar days. | did provide the data (or written response that it does not have the requested data) in greater than 60 calendar days but less than or equal to 75 calendar days. | OR The Reliability Coordinator or Transmission Operator provided a written response that it does not have the requested data, but actually had the data. |
|--|--|--|--|--|--|---|

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

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Guidelines and Technical Basis

Requirement R1:

The requirement focuses on the results-based outcome of developing a process for and performing a validation, but does not prescribe a specific method or procedure for the validation outside of the attributes specified in the requirement. For further information on suggested validation procedures, see “Procedures for Validation of Powerflow and Dynamics Cases” produced by the NERC Model Working Group.

The specific process is left to the judgment of the Planning Coordinator, but the Planning Coordinator is required to develop and include in its process guidelines for evaluating discrepancies between actual system behavior or response and expected system performance for determining whether the discrepancies are unacceptable.

For the validation in part 1.1, the state estimator case or other Real-time data should be taken as close to system peak as possible. However, other snapshots of the system could be used if deemed to be more appropriate by the Planning Coordinator. While the requirement specifies “once every 24 calendar months,” entities are encouraged to perform the comparison on a more frequent basis.

In performing the comparison required in part 1.1, the Planning Coordinator may consider, among other criteria:

1. System load;
2. Transmission topology and parameters;
3. Voltage at major buses; and
4. Flows on major transmission elements.

The validation in part 1.1 would include consideration of the load distribution and load power factors (as applicable) used in the power flow models. The validation may be made using metered load data if state estimator cases are not available. The comparison of system load distribution and load power factors shall be made on an aggregate company or power flow zone level at a minimum but may also be made on a bus by bus, load pocket (e.g., within a Balancing Authority), or smaller area basis as deemed appropriate by the Planning Coordinator.

The scope of dynamics model validation is intended to be limited, for purposes of part 1.2, to the Planning Coordinator’s planning area, and the intended emphasis under the requirement is on local events or local phenomena, not the whole Interconnection.

The validation required in part 1.2 may include simulations that are to be compared with actual system data and may include comparisons of:

- Voltage oscillations at major buses
- System frequency (for events with frequency excursions)
- Real and reactive power oscillations on generating units and major inter-area ties

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Determining when a dynamic local event might occur may be unpredictable, and because of the analytic complexities involved in simulation, the time parameters in part 1.2 specify that the comparison period of “at least once every 24 calendar months” is intended to both provide for at least 24 months between dynamic local events used in the comparisons and that comparisons must be completed within 24 months of the date of the dynamic local event used. This clarification ensures that PCs will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison. With the 30 day timeframe in Requirement R2 for TOPs or RCs to provide actual system behavior data (if necessary in the comparison), it would potentially be impossible to complete the comparison within the 24 month timeframe.

In contrast, the requirement language clarifies that the time frame between dynamic local events used in the comparisons should be within 24 months of each other (or, as specified at the end of part 1.2, in the event more than 24 months passes before the next dynamic local event, the comparison should use the next dynamic local event that occurs). Each comparison must be completed within 24 months of the dynamic local event used. In this manner, the potential problem with a “month 23” dynamic local event described above is resolved. For example, if a PC uses for comparison a dynamic local event occurring on day 1 of month 1, the PC has 24 calendar months from that dynamic local event’s occurrence to complete the comparison. If the next dynamic event the PC chooses for comparison occurs in month 23, the PC has 24 months from that dynamic local event’s occurrence to complete the comparison.

Part 1.3 requires the PC to include guidelines in its documented validation process for determining when discrepancies in the comparison of simulation results with actual system results are unacceptable. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both. For the power flow comparison, as an example, this could include a guideline the Planning Coordinator will use that flows on 500 kV lines should be within 10% or 100 MW, whichever is larger. It could be different percentages or MW amounts for different voltage levels. Or, as another example, the guideline for voltage comparisons could be that it must be within 1%. But the guidelines the PC includes within its documented validation process should be meaningful for the Planning Coordinator’s system. Guidelines for the dynamic event comparison may be less precise. Regardless, the comparison should indicate that the conclusions drawn from the two results should be consistent. For example, the guideline could state that the simulation result will be plotted on the same graph as the actual system response. Then the two plots could be given a visual inspection to see if they look similar or not. Or a guideline could be defined such that the rise time of the transient response in the simulation should be within 20% of the rise time of the actual system response. As for the power flow guidelines, the dynamic comparison criteria should be meaningful for the Planning Coordinator’s system.

The guidelines the PC includes in its documented validation process to resolve differences in Part 1.4 could include direct coordination with the data owner, and, if necessary, through the provisions of MOD-032-1, Requirement R3 (i.e., the validation performed under this requirement could identify technical concerns with the data). In other words, while this standard is focused on validation, results of the validation may identify data provided under the

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modeling data standard that needs to be corrected. If a model with estimated data or a generic model is used for a generator, and the model response does not match the actual response, then the estimated data should be corrected or a more detailed model should be requested from the data provider.

While the validation is focused on the Planning Coordinator's planning area, the model for the validation should be one that contains a wider area of the Interconnection than the Planning Coordinator's area. If the simulations can be made to match the actual system responses by reasonable changes to the data in the Planning Coordinator's area, then the Planning Coordinator should make those changes in coordination with the data provider. However, for some disturbances, the data in the Planning Coordinator's area may not be what is causing the simulations to not match actual responses. These situations should be reported to the Electric Reliability Organization (ERO). The guidelines the Planning Coordinator includes under Part 1.4 could cover these situations.

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

In FERC Order No. 693, paragraph 1210, the Commission directed inclusion of "a requirement that the models be validated against actual system responses." Furthermore, the Commission directs in paragraph 1211, "that actual system events be simulated and if the model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy." Paragraph 1220 similarly directs validation against actual system responses relative to dynamics system models. In FERC Order 890, paragraph 290, the Commission states that "the models should be updated and benchmarked to actual events." Requirement R1 addresses these directives.

Requirement R1 requires the Planning Coordinator to implement a documented data validation process to validate data in the Planning Coordinator's portion of the existing system in the steady-state and dynamic models to compare performance against expected behavior or response, which is consistent with the Commission directives. The validation of the full Interconnection-wide cases is left up to the Electric Reliability Organization (ERO) or its designees, and is not addressed by this standard. The following items were chosen for the validation requirement:

- A. Comparison of performance of the existing system in a planning power flow model to actual system behavior; and
- B. Comparison of the performance of the existing system in a planning dynamics model to actual system response.

Application Guidelines

Implementation of these validations will result in more accurate power flow and dynamic models. This, in turn, should result in better correlation between system flows and voltages seen in power flow studies and the actual values seen by system operators during outage conditions. Similar improvements should be expected for dynamics studies, such that the results will more closely match the actual responses of the power system to disturbances.

Validation of model data is a good utility practice, but it does not easily lend itself to Reliability Standards requirement language. Furthermore, it is challenging to determine specifications for thresholds of disturbances that should be validated and how they are determined. Therefore, this requirement focuses on the Planning Coordinator performing validation pursuant to its process, which must include the attributes listed in parts 1.1 through 1.4, without specifying the details of “how” it must validate, which is necessarily dependent upon facts and circumstances. Other validations are best left to guidance rather than standard requirements.

Rationale for R2:

The Planning Coordinator will need actual system behavior data in order to perform the validations required in R1. The Reliability Coordinator or Transmission Operator may have this data. Requirement R2 requires the Reliability Coordinator and Transmission Operator to supply actual system data, if it has the data, to any requesting Planning Coordinator for purposes of model validation under Requirement R1.

This could also include information the Reliability Coordinator or Transmission Operator has at a field site. For example, if a PMU or DFR is at a generator site and it is recording the disturbance, the Reliability Coordinator or Transmission Operator would typically have that data.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|---|
| 1 | February 6, 2014 | Adopted by the NERC Board of Trustees. | Developed as a new standard for system validation to address outstanding directives from FERC Order No. 693 and recommendations from several other sources. |
| 1 | May 1, 2014 | FERC Order issued approving MOD-033-1. | |

Application Guidelines

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| <u>2</u> | | <u>Adopted by the NERC Board of Trustees.</u> | |
|----------|--|---|--|

A. Introduction

1. **Title:** Nuclear Plant Interface Coordination
2. **Number:** NUC-001-4
3. **Purpose:** This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Nuclear Plant Generator Operators.
 - 4.2. Transmission Entities shall mean all entities that are responsible for providing services related to Nuclear Plant Interface Requirements (NPIRs). Such entities may include one or more of the following:
 - 4.2.1 Transmission Operators.
 - 4.2.2 Transmission Owners.
 - 4.2.3 Transmission Planners.
 - 4.2.4 Transmission Service Providers.
 - 4.2.5 Balancing Authorities.
 - 4.2.6 Reliability Coordinators.
 - 4.2.7 Planning Coordinators.
 - 4.2.8 Distribution Providers.
 - 4.2.9 Generator Owners.
 - 4.2.10 Generator Operators.
5. **Proposed Effective Date:**

See Implementation Plan.

B. Requirements and Measures

- R1.** The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M1.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide a copy of the transmittal and receipt of transmittal of the proposed NPIRs to the responsible Transmission Entities.
- R2.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements¹ that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** The Nuclear Plant Generator Operator and each Transmission Entity shall each have a copy of the currently effective Agreement(s) which document how the Nuclear Plant Generator Operator and the applicable Transmission Entities address and implement the NPIRs available for inspection upon request of the Compliance Enforcement Authority.
- R3.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Entity responsible for planning analyses in accordance with the Agreement shall, upon request of the Compliance Enforcement Authority, provide a copy of the planning analyses results transmitted to the Nuclear Plant Generator Operator, showing incorporation of the NPIRs. The Compliance Enforcement Authority shall refer to the Agreements developed in accordance with this standard for specific requirements.
- R4.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- 4.1.** Incorporate the NPIRs into their operating analyses of the electric system.
- 4.2.** Operate the electric system to meet the NPIRs.

¹ Agreements may include mutually agreed upon procedures or protocols in effect between entities or between departments of a vertically integrated system.

- 4.3. Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.
- M4.** Each Transmission Entity responsible for operating the electric system in accordance with the Agreement shall demonstrate or provide evidence of the following, upon request of the Compliance Enforcement Authority:
- The NPIRs have been incorporated into the current operating analysis of the electric system. (Requirement 4.1)
 - The electric system was operated to meet the NPIRs. (Requirement 4.2)
 - The Transmission Entity informed the Nuclear Plant Generator Operator when it became aware it lost the capability to assess the operation of the electric system affecting the NPIRs
- R5.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall operate the nuclear plant to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- M5.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, demonstrate or provide evidence that the nuclear power plant is being operated consistent with the NPIRs.
- R6.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M6.** The Transmission Entities and Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide evidence of the coordination between the Transmission Entities and the Nuclear Plant Generator Operator regarding outages and maintenance activities which affect the NPIRs.
- R7.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M7.** The Nuclear Plant Generator Operator shall provide evidence that it informed the applicable Transmission Entities of changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Transmission Entities to meet the NPIRs.

- R8.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M8.** The Transmission Entities shall each provide evidence that the entities informed the Nuclear Plant Generator Operator of changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Nuclear Plant Generator Operator to meet the NPIRs.
- R9.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include the following elements in aggregate within the Agreement(s) identified in R2.
- Where multiple Agreements with a single Transmission Entity are put into effect, the R9 elements must be addressed in aggregate within the Agreements; however, each Agreement does not have to contain each element. The Nuclear Plant Generator Operator and the Transmission Entity are responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements.
 - Where Agreements with multiple Transmission Entities are required, the Nuclear Plant Generator Operator is responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements with the Transmission Entities. The Agreements with each Transmission Entity do not have to contain each element; however, the Agreements with the multiple Transmission Entities, in the aggregate, must address all R9 elements. For each Agreement(s), the Nuclear Plant Generator Operator and the Transmission Entity are responsible to ensure the Agreement(s) contain(s) the elements of R9 applicable to that Transmission Entity. : *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 9.1.** Retired. *[Note: Part 9.1 was retired under the Paragraph 81 project. The NUC SDT proposes to leave this Part blank to avoid renumbering Requirement parts that would impact existing agreements throughout the industry.]*
- 9.2.** Technical requirements and analysis:
- 9.2.1.** Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the Agreement.
 - 9.2.2.** Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.

9.4.4. Provisions for supplying information necessary to report to government agencies, as related to NPIRs.

9.4.5. Provisions for personnel training, as related to NPIRs.

M9. The Nuclear Plant Generator Operator shall have a copy of the Agreement(s) addressing the elements in Requirement 9 available for inspection upon request of the Compliance Enforcement Authority. Each Transmission Entity shall have a copy of the Agreement(s) addressing the elements in Requirement 9 for which it is responsible available for inspection upon request of the Compliance Enforcement Authority.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

1.2. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.3. Data Retention

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- For Measure 1, the Nuclear Plant Generator Operator shall keep its latest transmittals and receipts.
- For Measure 2, the Nuclear Plant Generator Operator and each Transmission Entity shall have its current, in-force Agreement.
- For Measure 3, the Transmission Entity shall have the latest planning analysis results.
- For Measures 4, 6 and 8, the Transmission Entity shall keep evidence for two years plus current.
- For Measures 5, 6 and 7, the Nuclear Plant Generator Operator shall keep evidence for two years plus current.

If a Responsible Entity is found non-compliant it shall keep information related to the noncompliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|--------|--|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | | Medium | The Nuclear Plant Generator Operator provided the NPIRs to the applicable entities but did not verify receipt. | The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities unless there was only one entity. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to two of the applicable entities unless there were only two entities. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to more than two of applicable entities. OR For a particular nuclear power plant, if the number of possible applicable transmission entities is equal to the number of applicable transmission entities not provided NPIRs |
| R2 | | Medium | N/A | N/A | N/A | The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|---------------------------|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | | document the implementation of the NPIRs. |
| R3 | | Medium | N/A | The responsible entity incorporated the NPIRs into its planning analyses but did not communicate the results to the Nuclear Plant Generator Operator. | N/A | The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system. |
| R4 | | High | N/A | The responsible entity did not comply with Requirement R4, Part 4.3. | The responsible entity did not comply with Requirement R4, Part R4.1. | The responsible entity did not comply with Requirement R4, Part R4.2. |
| R5 | | High | N/A | N/A | N/A | The Nuclear Plant Generator Operator failed to operate per the NPIRs developed in accordance with this standard. |
| R6 | | Medium | N/A | The Nuclear Plant Generator Operator or Transmission Entity failed to provide | The Nuclear Plant Generator Operator or Transmission Entity failed to coordinate | N/A |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|-------------|---|---|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements. | one or more outages or maintenance activities in accordance the requirements of the agreements. | |
| R7 | | High | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>proposed</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | N/A | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs. |
| R8 | | High | The applicable Transmission Entities did not inform the | N/A | The applicable Transmission Entities did not inform the | The applicable Transmission Entities did not inform the |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Nuclear Plant Generator Operator of <u>proposed</u> changes to transmission system design, configuration (e.g. protective relay setpoints), operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>directly impacts</u> the ability of the electric system to meet the NPIRs. |
| R9 | | Medium | | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include up to 20% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to that entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include greater than 20%, but less than 40% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include 40% or more of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|---------------------------|--------------|---------------------------|---------------------------|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | applicable to the entity. | applicable to the entity. |

D. Regional Variances

The design basis for Canadian (CANDU) nuclear power plants (NPPs) does not result in the same licensing requirements as U.S. NPPs. Nuclear Regulatory Commission (NRC) design criteria specifies that in addition to emergency on-site electrical power, electrical power from the electric network also be provided to permit safe shutdown. There are no equivalent Canadian Regulatory requirements for electrical power from the electric network to be provided to permit safe shutdown. Therefore the definition of Nuclear Plant Licensing Requirements (NPLR) for Canadian CANDU NPPs will be as follows:

Canadian Nuclear Plant Licensing Requirements (CNPLR) are requirements included in the design basis of the nuclear plant and are statutorily mandated for the operation of the plant; when used in this standard, NPLR shall mean nuclear power plant licensing requirements for avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 1 | May 2, 2007 | Approved by Board of Trustees | New |
| 2 | August 5, 2009 | Adopted by Board of Trustees | Revised. Modifications for Order 716 to Requirement R9.3.5 and footnote 1; modifications to bring compliance elements into conformance with the latest version of the ERO Rules of Procedure. |
| 2 | January 22, 2010 | Approved by FERC on January 21, 2010. Added Effective Date | Update |
| 2 | February 7, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 2 | November 21, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2.1 | April 11, 2012 | Errata approved by the Standards Committee; (Capitalized “Protection System” in accordance with Implementation Plan for Project 2007-17 approval of revised definition of “Protection System”) | Errata associated with Project 2007-17 |
| 2.1 | September 9, 2013 | Informational filing submitted to reflect the revised | |

| | | | |
|---|------------------|---|----------|
| | | definition of Protection System in accordance with the Implementation Plan for the revised term. | |
| 3 | March 2014 | Modifications to implement the recommendations of the five-year review of NUC-001, which was accepted by the Standards Committee on October 17, 2013. | Revision |
| 3 | August 14, 2014 | Adopted by the NERC Board of Trustees | |
| 3 | November 4, 2014 | FERC letter order issued approving NUC-001-3 | |
| 4 | | Adopted by the NERC Board of Trustees | |

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R5:

The NUC FYRT recommended R5 be revised for consistency with R4 and to clarify that nuclear plants must be operated to meet the Nuclear Plant Interface Requirements.

Rationale for R7 and R8:

The NUC FYRT recommended deleting “Protection Systems” in Requirements R7 and R8 since it is a subset of the "nuclear plant design" and "electric system design" elements currently contained in R7 and R8 respectively; and adding a parenthetical clause (e.g. protective setpoints) to R7 following "nuclear plant design" and parenthetical clause (e.g. relay setpoints) to R8 following "electric system design."

Rationale for R9:

The NUC FYRT recommended that R9 be revised to clarify that all agreements do not have to discuss each of the elements in R9, but that the sum total of the agreements need to address the elements. In addition, for clarity in Part 9.4.1, the NUC FYRT recommended that "affecting the NPIRs" be inserted following "Provisions for communications" and "applicable unique" be inserted following ""definitions of."

Rationale for R9.3.7:

The term “Special Protection Systems” (SPS) was replaced with “Remedial Action Schemes” (RAS) in order to align with other current NERC standards development work in Project 2010-05.2: Special Protection Systems. Project 2010-05.2 has proposed to replace SPS with RAS throughout all of the NERC Standards in order to move to the use of a single term. RAS and SPS have the same definition in the NERC Glossary of Terms.

A. Introduction

1. **Title:** Nuclear Plant Interface Coordination
2. **Number:** NUC-001-~~43~~
3. **Purpose:** This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Nuclear Plant Generator Operators.
 - 4.2. Transmission Entities shall mean all entities that are responsible for providing services related to Nuclear Plant Interface Requirements (NPIRs). Such entities may include one or more of the following:
 - 4.2.1 Transmission Operators.
 - 4.2.2 Transmission Owners.
 - 4.2.3 Transmission Planners.
 - 4.2.4 Transmission Service Providers.
 - 4.2.5 Balancing Authorities.
 - 4.2.6 Reliability Coordinators.
 - 4.2.7 Planning Coordinators.
 - 4.2.8 Distribution Providers.
 - ~~4.2.9 Load Serving Entities.~~
 - ~~4.2.10~~4.2.9 Generator Owners.
 - ~~4.2.11~~4.2.10 Generator Operators.
5. **Background:** ~~Project 2012-13 Nuclear Power Interface Coordination seeks to implement the changes that were proposed by the NUC FYRT. The NUC FYRT was appointed by the Standards Committee Executive Committee on April 22, 2013. The NUC FYRT reviewed the NUC-001-2.1 standard to identify opportunities for consolidation and additional improvements. The NUC FYRT posted its recommendation to revise NUC-001-2.1 for industry comment on July 27, 2013. The NUC FYRT considered comments and submitted its final recommendation to revise NUC-001-2.1, along with a Standards Authorization Request (SAR) to the Standards Committee on October 17, 2013. The Standards Committee accepted the~~

~~recommendation of the FYRT and appointed the team as the Standard Drafting Team (SDT) to implement the recommendation.~~

- ~~6.— **Effective Dates:**— First day of the first calendar quarter that is twelve months beyond the date that this standard is approved by applicable regulatory authorities, or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is twelve months after the date this standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

B. Requirements and Measures

- R1.** The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt. [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning*]
- M1.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide a copy of the transmittal and receipt of transmittal of the proposed NPIRs to the responsible Transmission Entities.
- R2.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements¹ that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs. [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning*]
- M2.** The Nuclear Plant Generator Operator and each Transmission Entity shall each have a copy of the currently effective Agreement(s) which document how the Nuclear Plant Generator Operator and the applicable Transmission Entities address and implement the NPIRs available for inspection upon request of the Compliance Enforcement Authority.
- R3.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.: [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning*]
- M3.** Each Transmission Entity responsible for planning analyses in accordance with the Agreement shall, upon request of the Compliance Enforcement Authority, provide a copy of the planning analyses results transmitted to the Nuclear Plant Generator Operator, showing incorporation of the NPIRs. The Compliance Enforcement

¹ Agreements may include mutually agreed upon procedures or protocols in effect between entities or between departments of a vertically integrated system.

Authority shall refer to the Agreements developed in accordance with this standard for specific requirements.

- R4.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- 4.1.** Incorporate the NPIRs into their operating analyses of the electric system.
 - 4.2.** Operate the electric system to meet the NPIRs.
 - 4.3.** Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.
- M4.** Each Transmission Entity responsible for operating the electric system in accordance with the Agreement shall demonstrate or provide evidence of the following, upon request of the Compliance Enforcement Authority:
- The NPIRs have been incorporated into the current operating analysis of the electric system. (Requirement 4.1)
 - The electric system was operated to meet the NPIRs. (Requirement 4.2)
 - The Transmission Entity informed the Nuclear Plant Generator Operator when it became aware it lost the capability to assess the operation of the electric system affecting the NPIRs
- R5.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall operate the nuclear plant to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- M5.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, demonstrate or provide evidence that the nuclear power plant is being operated consistent with the NPIRs.
- R6.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M6.** The Transmission Entities and Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide evidence of the coordination between the Transmission Entities and the Nuclear Plant Generator Operator regarding outages and maintenance activities which affect the NPIRs.
- R7.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design (e.g., protective relay setpoints),

configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*

- M7.** The Nuclear Plant Generator Operator shall provide evidence that it informed the applicable Transmission Entities of changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Transmission Entities to meet the NPIRs.
- R8.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M8.** The Transmission Entities shall each provide evidence that the entities informed the Nuclear Plant Generator Operator of changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Nuclear Plant Generator Operator to meet the NPIRs.
- R9.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include the following elements in aggregate within the Agreement(s) identified in R2.
- Where multiple Agreements with a single Transmission Entity are put into effect, the R9 elements must be addressed in aggregate within the Agreements; however, each Agreement does not have to contain each element. The Nuclear Plant Generator Operator and the Transmission Entity are responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements.
 - Where Agreements with multiple Transmission Entities are required, the Nuclear Plant Generator Operator is responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements with the Transmission Entities. The Agreements with each Transmission Entity do not have to contain each element; however, the Agreements with the multiple Transmission Entities, in the aggregate, must address all R9 elements. For each Agreement(s), the Nuclear Plant Generator Operator and the Transmission Entity are responsible to ensure the Agreement(s) contain(s) the elements of R9 applicable to that Transmission Entity. : *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 9.1.** Retired. *[Note: Part 9.1 was retired under the Paragraph 81 project. The NUC SDT proposes to leave this Part blank to avoid renumbering Requirement parts that would impact existing agreements throughout the industry.]*

9.2. Technical requirements and analysis:

- 9.2.1.** Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the Agreement.
- 9.2.2.** Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.
- 9.2.3.** Types of planning and operational analyses performed specifically to support the NPIRs, including the frequency of studies and types of Contingencies and scenarios required.

9.3. Operations and maintenance coordination

- 9.3.1.** Designation of ownership of electrical facilities at the interface between the electric system and the nuclear plant and responsibilities for operational control coordination and maintenance of these facilities.
- 9.3.2.** Identification of any maintenance requirements for equipment not owned or controlled by the Nuclear Plant Generator Operator that are necessary to meet the NPIRs.
- 9.3.3.** Coordination of testing, calibration and maintenance of on-site and off-site power supply systems and related components.
- 9.3.4.** Provisions to address mitigating actions needed to avoid violating NPIRs and to address periods when responsible Transmission Entity loses the ability to assess the capability of the electric system to meet the NPIRs. These provisions shall include responsibility to notify the Nuclear Plant Generator Operator within a specified time frame.
- 9.3.5.** Provision for considering, within the restoration process, the requirements and urgency of a nuclear plant that has lost all off-site and on-site AC power.
- 9.3.6.** Coordination of physical and cyber security protection at the nuclear plant interface to ensure each asset is covered under at least one entity's plan.
- 9.3.7.** Coordination of the NPIRs with transmission system Remedial Action Schemes and any programs that reduce or shed load based on underfrequency or undervoltage.

9.4. Communications and training Administrative elements:

- 9.4.1.** Provisions for communications affecting the NPIRs between the Nuclear Plant Generator Operator and Transmission Entities, including communications protocols, notification time requirements, and definitions of applicable unique terms.
- 9.4.2.** Provisions for coordination during an off-normal or emergency event affecting the NPIRs, including the need to provide timely information explaining the event, an estimate of when the system will be returned to a normal state, and the actual time the system is returned to normal.

- 9.4.3. Provisions for coordinating investigations of causes of unplanned events affecting the NPIRs and developing solutions to minimize future risk of such events.
- 9.4.4. Provisions for supplying information necessary to report to government agencies, as related to NPIRs.
- 9.4.5. Provisions for personnel training, as related to NPIRs.

M9. The Nuclear Plant Generator Operator shall have a copy of the Agreement(s) addressing the elements in Requirement 9 available for inspection upon request of the Compliance Enforcement Authority. Each Transmission Entity shall have a copy of the Agreement(s) addressing the elements in Requirement 9 for which it is responsible available for inspection upon request of the Compliance Enforcement Authority.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

1.2. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.3. Data Retention

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- For Measure 1, the Nuclear Plant Generator Operator shall keep its latest transmittals and receipts.
- For Measure 2, the Nuclear Plant Generator Operator and each Transmission Entity shall have its current, in-force Agreement.
- For Measure 3, the Transmission Entity shall have the latest planning analysis results.

- For Measures 4, 6 and 8, the Transmission Entity shall keep evidence for two years plus current.
- For Measures 5, 6 and 7, the Nuclear Plant Generator Operator shall keep evidence for two years plus current.

If a Responsible Entity is found non-compliant it shall keep information related to the noncompliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|--|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | | Medium | The Nuclear Plant Generator Operator provided the NPIRs to the applicable entities but did not verify receipt. | The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities unless there was only one entity. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to two of the applicable entities unless there were only two entities. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to more than two of applicable entities. OR For a particular nuclear power plant, if the number of possible applicable transmission entities is equal to the number of applicable transmission entities not provided NPIRs |
| R2 | | Medium | N/A | N/A | N/A | The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and document the implementation of the NPIRs. |
| R3 | | Medium | N/A | The responsible entity incorporated the NPIRs into its planning analyses but did not communicate | N/A | The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system. |

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| | | | | | | |
|-----------|--|---------------|---|---|--|---|
| | | | | the results to the Nuclear Plant Generator Operator. | | |
| R4 | | High | N/A | The responsible entity did not comply with Requirement R4, Part 4.3. | The responsible entity did not comply with Requirement R4, Part R4.1. | The responsible entity did not comply with Requirement R4, Part R4.2. |
| R5 | | High | N/A | N/A | N/A | The Nuclear Plant Generator Operator failed to operate per the NPIRs developed in accordance with this standard. |
| R6 | | Medium | N/A | The Nuclear Plant Generator Operator or Transmission Entity failed to provide outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements. | The Nuclear Plant Generator Operator or Transmission Entity failed to coordinate one or more outages or maintenance activities in accordance the requirements of the agreements. | N/A |
| R7 | | High | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>proposed</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | N/A | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs. |
| R8 | | High | The applicable Transmission Entities did not inform the Nuclear | N/A | The applicable Transmission Entities did not inform the Nuclear | The applicable Transmission Entities did not inform the Nuclear |

| | | | | | | |
|-----------|--|---------------|---|---|--|--|
| | | | Plant Generator Operator of <u>proposed</u> changes to transmission system design, configuration (e.g. protective relay setpoints), operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | | Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>directly impacts</u> the ability of the electric system to meet the NPIRs. |
| R9 | | Medium | | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include up to 20% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to that entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include greater than 20%, but less than 40% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to the entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include 40% or more of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to the entity. |

D. Regional Variances

The design basis for Canadian (CANDU) nuclear power plants (NPPs) does not result in the same licensing requirements as U.S. NPPs. Nuclear Regulatory Commission (NRC) design criteria specifies that in addition to emergency on-site electrical power, electrical power from the electric network also be provided to permit safe shutdown. There are no equivalent Canadian Regulatory requirements for electrical power from the electric network to be provided to permit safe shutdown. Therefore the definition of Nuclear Plant Licensing Requirements (NPLR) for Canadian CANDU NPPs will be as follows:

Canadian Nuclear Plant Licensing Requirements (CNPLR) are requirements included in the design basis of the nuclear plant and are statutorily mandated for the operation of the plant; when used in this standard, NPLR shall mean nuclear power plant licensing requirements for avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.

E. Interpretations

None.

F. Associated Documents

None

Version History

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| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 1 | May 2, 2007 | Approved by Board of Trustees | New |
| 2 | August 5, 2009 | Adopted by Board of Trustees | Revised. Modifications for Order 716 to Requirement R9.3.5 and footnote 1; modifications to bring compliance elements into conformance with the latest version of the ERO Rules of Procedure. |
| 2 | January 22, 2010 | Approved by FERC on January 21, 2010. Added Effective Date | Update |
| 2 | February 7, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 2 | November 21, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2.1 | April 11, 2012 | Errata approved by the Standards Committee; (Capitalized “Protection System” in accordance with Implementation Plan for Project 2007-17 approval of revised definition of “Protection System”) | Errata associated with Project 2007-17 |
| 2.1 | September 9, 2013 | Informational filing submitted to reflect the revised definition of Protection System in accordance with the Implementation Plan for the revised term. | |
| 3 | March 2014 | Modifications to implement the recommendations of the five-year review of NUC-001, which was accepted by the Standards Committee on October 17, 2013. | Revision |
| 3 | August 14, 2014 | Adopted by the NERC Board of Trustees | |
| 3 | November 4, 2014 | FERC letter order issued approving NUC-001-3 | |

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| 4 | | <u>Adopted by the NERC Board of Trustees</u> | |
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Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R5:

The NUC FYRT recommended R5 be revised for consistency with R4 and to clarify that nuclear plants must be operated to meet the Nuclear Plant Interface Requirements.

Rationale for R7 and R8:

The NUC FYRT recommended deleting “Protection Systems” in Requirements R7 and R8 since it is a subset of the "nuclear plant design" and "electric system design" elements currently contained in R7 and R8 respectively; and adding a parenthetical clause (e.g. protective setpoints) to R7 following "nuclear plant design" and parenthetical clause (e.g. relay setpoints) to R8 following "electric system design."

Rationale for R9:

The NUC FYRT recommended that R9 be revised to clarify that all agreements do not have to discuss each of the elements in R9, but that the sum total of the agreements need to address the elements. In addition, for clarity in Part 9.4.1, the NUC FYRT recommended that "affecting the NPIRs" be inserted following "Provisions for communications" and "applicable unique" be inserted following ""definitions of."

Rationale for R9.3.7:

The term “Special Protection Systems” (SPS) was replaced with “Remedial Action Schemes” (RAS) in order to align with other current NERC standards development work in Project 2010-05.2: Special Protection Systems. Project 2010-05.2 has proposed to replace SPS with RAS throughout all of the NERC Standards in order to move to the use of a single term. RAS and SPS have the same definition in the NERC Glossary of Terms.

A. Introduction

1. **Title:** Automatic Underfrequency Load Shedding
2. **Number:** PRC-006-4
3. **Purpose:** To establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.
4. **Applicability:**
 - 4.1. Planning Coordinators
 - 4.2. UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:
 - 4.2.1 Transmission Owners
 - 4.2.2 Distribution Providers
 - 4.2.3 UFLS-Only Distribution Providers¹
 - 4.3. Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators.
5. **Effective Date:**

See Implementation Plan

B. Requirements and Measures

- R1.** Each Planning Coordinator shall develop and document criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES), including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands. [*VRF: Medium*][*Time Horizon: Long-term Planning*]
- M1.** Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement R1.
- R2.** Each Planning Coordinator shall identify one or more islands to serve as a basis for designing its UFLS program including: [*VRF: Medium*][*Time Horizon: Long-term Planning*]

¹ NERC Rules of Procedure, Appendix 5
https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC_ROP_Effective_20160504.pdf

- 2.1.** Those islands selected by applying the criteria in Requirement R1, and
 - 2.2.** Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System, and
 - 2.3.** A single island that includes all portions of the BES in either the Regional Entity area or the Interconnection in which the Planning Coordinator's area resides. If a Planning Coordinator's area resides in multiple Regional Entity areas, each of those Regional Entity areas shall be identified as an island. Planning Coordinators may adjust island boundaries to differ from Regional Entity area boundaries by mutual consent where necessary for the sole purpose of producing contiguous regional islands more suitable for simulation.
- M2.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s) as a basis for designing a UFLS program that meet the criteria in Requirement R2, Parts 2.1 through 2.3.
- R3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). [*VRF: High*][*Time Horizon: Long-term Planning*]
- 3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
 - 3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
 - 3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.

- M3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement R3, Parts 3.1 through 3.3.
- R4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- 4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - 4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - 4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - 4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - 4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - 4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - 4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement R4, Parts 4.1 through 4.7.
- R5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall coordinate its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also

part of the same identified island through one of the following: *[VRF: High][Time Horizon: Long-term Planning]*

- Develop a common UFLS program design and schedule for implementation per Requirement R3 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct a joint UFLS design assessment per Requirement R4 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct an independent UFLS design assessment per Requirement R4 for the identified island, and in the event the UFLS design assessment fails to meet Requirement R3, identify modifications to the UFLS program(s) to meet Requirement R3 and report these modifications as recommendations to the other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island and the ERO.
- M5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall have dated evidence such as joint UFLS program design documents, reports describing a joint UFLS design assessment, letters that include recommendations, or other dated documentation demonstrating that it coordinated its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island per Requirement R5.
- R6.** Each Planning Coordinator shall maintain a UFLS database containing data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M6.** Each Planning Coordinator shall have dated evidence such as a UFLS database, data requests, data input forms, or other dated documentation to show that it maintained a UFLS database for use in event analyses and assessments of the UFLS program per Requirement R6 at least once each calendar year, with no more than 15 months between maintenance activities.
- R7.** Each Planning Coordinator shall provide its UFLS database containing data necessary to model its UFLS program to other Planning Coordinators within its Interconnection within 30 calendar days of a request. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M7.** Each Planning Coordinator shall have dated evidence such as letters, memorandums, e-mails or other dated documentation that it provided their UFLS database to other Planning Coordinators within their Interconnection within 30 calendar days of a request per Requirement R7.
- R8.** Each UFLS entity shall provide data to its Planning Coordinator(s) according to the format and schedule specified by the Planning Coordinator(s) to support maintenance

of each Planning Coordinator's UFLS database. *[VRF: Lower][Time Horizon: Long-term Planning]*

- M8.** Each UFLS Entity shall have dated evidence such as responses to data requests, spreadsheets, letters or other dated documentation that it provided data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator to support maintenance of the UFLS database per Requirement R8.
- R9.** Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. *[VRF: High][Time Horizon: Long-term Planning]*
- M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays, spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, per Requirement R9.
- R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. *[VRF: High][Time Horizon: Long-term Planning]*
- M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.
- R11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
 - 11.1.** The performance of the UFLS equipment,
 - 11.2.** The effectiveness of the UFLS program.
- M11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted an event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement R11.
- R12.** Each Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design

assessment to consider the identified deficiencies within two years of event actuation.
[VRF: Medium][Time Horizon: Operations Assessment]

M12. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted a UFLS design assessment per Requirements R12 and R4 if UFLS program deficiencies are identified in R11.

R13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall coordinate its event assessment (in accordance with Requirement R11) with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event through one of the following: *[VRF: Medium][Time Horizon: Operations Assessment]*

- Conduct a joint event assessment per Requirement R11 among the Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 that reaches conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 and where the assessment fails to reach conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, identify differences in the assessments that likely resulted in the differences in the conclusions and recommendations and report these differences to the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event and the ERO.

M13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall have dated evidence such as a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations, or other dated documentation demonstrating it coordinated its event assessment (per Requirement R11) with all other Planning Coordinator(s) whose areas or portions of whose areas were also included in the same islanding event per Requirement R13.

R14. Each Planning Coordinator shall respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written

response to comments whether changes will be made or reasons why changes will not be made to the following [*VRF: Lower*][*Time Horizon: Long-term Planning*]:

14.1. UFLS program, including a schedule for implementation

14.2. UFLS design assessment

14.3. Format and schedule of UFLS data submittal

M14. Each Planning Coordinator shall have dated evidence of responses, such as e-mails and letters, to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program per Requirement R14.

R15. Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [*VRF: High*][*Time Horizon: Long-term Planning*]

15.1. For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.

15.2. For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.

M15. Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

Each Planning Coordinator and UFLS entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Planning Coordinator shall retain the current evidence of Requirements R1, R2, R3, R4, R5, R12, R14, and R15, Measures M1, M2, M3, M4, M5, M12, M14, and M15 as well as any evidence necessary to show compliance since the last compliance audit.
- Each Planning Coordinator shall retain the current evidence of UFLS database update in accordance with Requirement R6, Measure M6, and evidence of the prior year’s UFLS database update.
- Each Planning Coordinator shall retain evidence of any UFLS database transmittal to another Planning Coordinator since the last compliance audit in accordance with Requirement R7, Measure M7.
- Each UFLS entity shall retain evidence of UFLS data transmittal to the Planning Coordinator(s) since the last compliance audit in accordance with Requirement R8, Measure M8.
- Each UFLS entity shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R9, Measure M9, and evidence of adherence since the last compliance audit.
- Transmission Owner shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R10, Measure M10, and evidence of adherence since the last compliance audit.
- Each Planning Coordinator shall retain evidence of Requirements R11, and R13, and Measures M11, and M13 for 6 calendar years.

If a Planning Coordinator or UFLS entity is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the retention period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Violation Investigation

Self-Reporting

Complaints

1.4. Additional Compliance Information

None

Violation Severity Levels

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|-----------|---|---|--|
| R1 | N/A | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands.</p> <p>OR</p> <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator failed to develop and document criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> |
| R2 | N/A | <p>The Planning Coordinator identified an island(s) to</p> | <p>The Planning Coordinator identified an island(s) to serve</p> | <p>The Planning Coordinator identified an island(s) to serve</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------------|------------|---|--|---|
| | | <p>serve as a basis for designing its UFLS program but failed to include one (1) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include two (2) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include all of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) to serve as a basis for designing its UFLS program.</p> |
| <p>R3</p> | <p>N/A</p> | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet one (1) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet two (2) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet all the performance characteristic in Requirement R3, Parts 3.1, 3.2, and 3.3 in simulations of underfrequency conditions.</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|---|---|---|---|
| | | | | including notification of and a schedule for implementation by UFLS entities within its area |
| R4 | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include one (1) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include two (2) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include three (3) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 but simulation failed to include four (4) or more of the items as specified in Requirement R4, Parts 4.1 through 4.7. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2 |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| R5 | N/A | N/A | N/A | The Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, failed to coordinate its UFLS program design through one of the manners described in Requirement R5. |
| R6 | N/A | N/A | N/A | The Planning Coordinator failed to maintain a UFLS database for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. |
| R7 | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 30 calendar days and up to and including 40 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 40 calendar days but less than and including 50 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 50 calendar days but less than and including 60 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 60 calendar days following the request. OR |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|--|---|---|---|
| | | | | The Planning Coordinator failed to provide its UFLS database to other Planning Coordinators. |
| R8 | The UFLS entity provided data to its Planning Coordinator(s) less than or equal to 10 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 10 calendar days but less than or equal to 15 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity provided data to its Planning Coordinator(s) but the data was not according to the format specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> | The UFLS entity provided data to its Planning Coordinator(s) more than 15 calendar days but less than or equal to 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity failed to provide data to its Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> |
| R9 | The UFLS entity provided less than 100% but more than (and including) 95% of automatic tripping of Load in accordance with the UFLS | The UFLS entity provided less than 95% but more than (and including) 90% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 90% but more than (and including) 85% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 85% of automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|---|--|--|--|
| | program design and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. |
| R10 | The Transmission Owner provided less than 100% but more than (and including) 95% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 95% but more than (and including) 90% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 90% but more than (and including) 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. |
| R11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate one (1) of the Parts as specified in Requirement R11, Parts 11.1 or 11.2.</p> | <p>conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to conduct and document an assessment of the event and evaluate the Parts as specified in Requirement R11, Parts 11.1 and 11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate all of the Parts</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | as specified in Requirement R11, Parts 11.1 and 11.2. |
| R12 | N/A | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than two years but less than or equal to 25 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 25 months but less than or equal to 26 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 26 months of event actuation. OR The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, failed to conduct and document a UFLS design assessment to consider the identified deficiencies. |
| R13 | N/A | N/A | N/A | The Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | <p>program, failed to coordinate its UFLS event assessment with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event in one of the manners described in Requirement R13</p> |
| R14 | N/A | N/A | N/A | <p>The Planning Coordinator failed to respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes were made or reasons why changes were not made to the items in Parts 14.1 through 14.3.</p> |
| R15 | N/A | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | <p>characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.</p> | <p>characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.</p> | <p>characteristics in Requirement R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area.</p> <p>OR</p> <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p> |

D. Regional Variances

D.A. Regional Variance for the Quebec Interconnection

The following Interconnection-wide variance shall be applicable in the Quebec Interconnection and replaces, in their entirety, Requirements R3 and R4 and the violation severity levels associated with Requirements R3 and R4.

Rationale for Requirement D.A.3:

There are two modifications for requirement D.A.3 :

1. 25% Generation Deficiency : Since the Quebec Interconnection has no potential viable BES Island in underfrequency conditions, the largest generation deficiency scenarios are limited to extreme contingencies not already covered by RAS.

Based on Hydro-Québec TransÉnergie Transmission Planning requirements, the stability of the network shall be maintained for extreme contingencies using a case representing internal transfers not expected to be exceeded 25% of the time.

The Hydro-Québec TransÉnergie defense plan to cover these extreme contingencies includes two RAS (RPTC- generation rejection and remote load shedding and TDST - a centralized UVLS) and the UFLS.

2. Frequency performance curve (attachment 1A) : Specific cases where a small generation deficiency using a peak case scenario with the minimum requirement of spinning reserve can lead to an acceptable frequency deviation in the Quebec Interconnection while stabilizing between the PRC-006-2 requirement (59.3 Hz) and the UFLS anti-stall threshold (59.0 Hz).

An increase of the anti-stall threshold to 59.3 Hz would correct this situation but would cause frequent load shedding of customers without any gain of system reliability. Therefore, it is preferable to lower the steady state frequency minimum value to 59.0 Hz.

The delay in the performance characteristics curve is harmonized between D.A.3 and R.3 to 60 seconds.

Rationale for Requirements D.A.3.3. and D.A.4:

The Quebec Interconnection has its own definition of BES. In Quebec, the vast majority of BES generating plants/facilities are not directly connected to the BES. For simulations to take into account sufficient generating resources D.A.3.3 and D.A.4 need simply refer to BES generators, plants or facilities since these are listed in a Registry approved by Québec's Regulatory Body (Régie de l'Énergie).

- D.A.3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from each of these extreme events:

- Loss of the entire capability of a generating station.
- Loss of all transmission circuits emanating from a generating station, switching station, substation or dc terminal.
- Loss of all transmission circuits on a common right-of-way.
- Three-phase fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.
- Three-phase fault on a circuit breaker, with normal fault clearing.
- The operation or partial operation of a RAS for an event or condition for which it was not intended to operate.

[VRF: High][Time Horizon: Long-term Planning]

- D.A.3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
 - D.A.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
 - D.A.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each Quebec BES generator bus and associated generator step-up transformer high-side bus
- M.D.A.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.A.3 Parts D.A.3.1 through D.A.3.3.
- D.A.4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 for each island identified in Requirement R2. The simulation shall model each of the following; *[VRF: High][Time Horizon: Long-term Planning]*

- D.A.4.1** Underfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1A, and
 - D.A.4.2** Overfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 - Attachment 1A, and
 - D.A.4.3** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.A.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement D.A.4 Parts D.A.4.1 through D.A.4.3.

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| DA3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Parts D.A.3.1, D.A.3.2, and D.A.3.3 in simulations of underfrequency conditions</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| DA4 | N/A | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include one (1) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include two (2) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include all of the items as</p> |

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 and D.A.4.3. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 |

D.B. Regional Variance for the Western Electricity Coordinating Council

The following Interconnection-wide variance shall be applicable in the Western Electricity Coordinating Council (WECC) and replaces, in their entirety, Requirements R1, R2, R3, R4, R5, R11, R12, and R13.

D.B.1. Each Planning Coordinator shall participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that develops and documents criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES) that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*

M.D.B.1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria, developed as part of the joint regional review with other Planning Coordinators in the WECC Regional Entity area to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement D.B.1.

D.B.2. Each Planning Coordinator shall identify one or more islands from the regional review (per D.B.1) to serve as a basis for designing a region-wide coordinated UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*

D.B.2.1. Those islands selected by applying the criteria in Requirement D.B.1, and

D.B.2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System.

M.D.B.2. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s), from the regional review (per D.B.1), as a basis for designing a region-wide coordinated UFLS program that meet the criteria in Requirement D.B.2 Parts D.B.2.1 and D.B.2.2.

D.B.3. Each Planning Coordinator shall adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*

D.B.3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- D.B.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
- D.B.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - D.B.3.3.1.** Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - D.B.3.3.2.** Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - D.B.3.3.3.** Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M.D.B.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its adoption of a UFLS program, coordinated across the WECC Regional Entity area, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.B.3 Parts D.B.3.1 through D.B.3.3.
- D.B.4.** Each Planning Coordinator shall participate in and document a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
 - D.B.4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - D.B.4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - D.B.4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the

Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.

- D.B.4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - D.B.4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - D.B.4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - D.B.4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.B.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its participation in a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area that demonstrates it meets Requirement D.B.4 Parts D.B.4.1 through D.B.4.7.
- D.B.11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall participate in and document a coordinated event assessment with all affected Planning Coordinators to conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- D.B.11.1.** The performance of the UFLS equipment,
 - D.B.11.2** The effectiveness of the UFLS program
- M.D.B.11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a coordinated event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement D.B.11.
- D.B.12.** Each Planning Coordinator, in whose islanding event assessment (per D.B.11) UFLS program deficiencies are identified, shall participate in and document a coordinated UFLS design assessment of the UFLS program with the other

Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*

- M.D.B.12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a UFLS design assessment per Requirements D.B.12 and D.B.4 if UFLS program deficiencies are identified in D.B.11.

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| D.B.1 | N/A | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> <p>OR</p> <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator failed to participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas that may form islands</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| D.B.2 | N/A | N/A | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include one (1) of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include all of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) from the regional review to serve as a basis for designing its UFLS program.</p> |
| D.B.3 | N/A | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, and D.B.3.3 in simulations of underfrequency conditions</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | <p>OR</p> <p>The Planning Coordinator failed to adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| <p>D.B.4</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include one (1) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include two (2) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include three (3) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include four (4) or more of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> <p>OR</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | <p>The Planning Coordinator failed to participate in and document a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2</p> |
| <p>D.B.11</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than one year but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 13 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 14 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| | less than or equal to 13 months of actuation. | less than or equal to 14 months of actuation. | less than or equal to 15 months of actuation. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate one (1) of the parts as specified in Requirement D.B.11, Parts D.B.11.1 or D.B.11.2. | time greater than 15 months of actuation. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to participate in and document a coordinated event assessment with all Planning Coordinators whose areas or portion of whose areas were also included in the same island event and evaluate the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----------------------|------------|---|---|--|
| | | | | <p>in the same islanding event within one year of event actuation but failed to evaluate all of the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> |
| <p>D.B.12</p> | <p>N/A</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than two years but less than or equal to 25 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 25 months but less than or equal to 26 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 26 months of event actuation.</p> <p>OR</p> <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, failed to participate in and document a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--------------|----------|---|
| | | | | to consider the identified deficiencies |

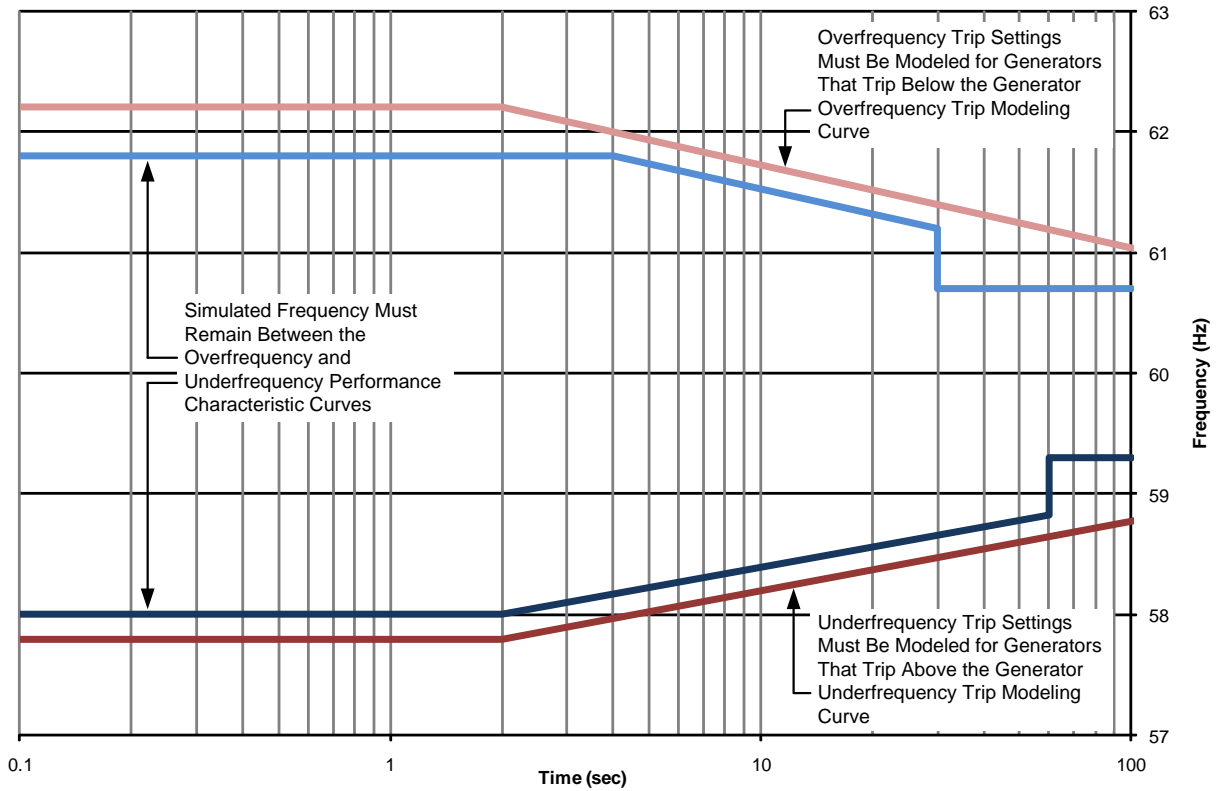
E. Associated Documents

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | May 25, 2010 | Completed revision, merging and updating PRC-006-0, PRC-007-0 and PRC-009-0. | |
| 1 | November 4, 2010 | Adopted by the Board of Trustees | |
| 1 | May 7, 2012 | FERC Order issued approving PRC-006-1 (approval becomes effective July 10, 2012) | |
| 1 | November 9, 2012 | FERC Letter Order issued accepting the modification of the VRF in R5 from (Medium to High) and the modification of the VSL language in R8. | |
| 2 | November 13, 2014 | Adopted by the Board of Trustees | Revisions made under Project 2008-02: Undervoltage Load Shedding (UVLS) & Underfrequency Load Shedding (UFLS) to address directive issued in FERC Order No. 763. Revisions to existing Requirement R9 and R10 and addition of new Requirement R15. |
| 3 | August 10, 2017 | Adopted by the NERC Board of Trustees | Revisions to the Regional Variance for the Quebec Interconnection. |
| 4 | | Adopted by the NERC Board of Trustees | |

PRC-006-3 – Attachment 1

Underfrequency Load Shedding Program
 Design Performance and Modeling Curves for
 Requirements R3 Parts 3.1-3.2 and R4 Parts 4.1-4.6

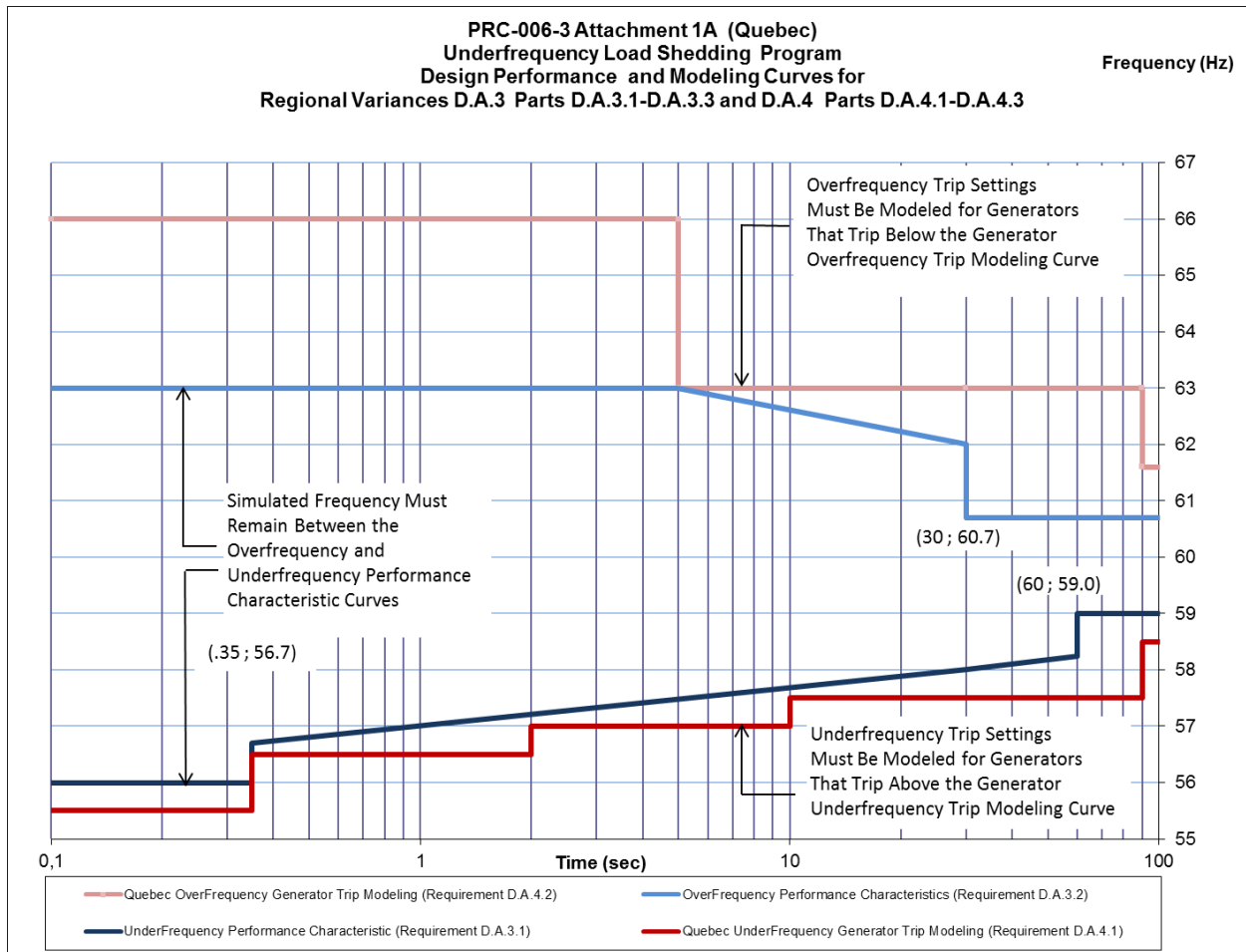


- Generator Overfrequency Trip Modeling (Requirement R4 Parts 4.4-4.6)
- Overfrequency Performance Characteristic (Requirement R3 Part 3.2)
- Underfrequency Performance Characteristic (Requirement R3 Part 3.1)
- Generator Underfrequency Trip Modeling (Requirement R4 Parts 4.1-4.3)

Curve Definitions

| Generator Overfrequency Trip Modeling | | Overfrequency Performance Characteristic | | |
|---------------------------------------|--------------------------------|--|--------------------------------|-------------|
| $t \leq 2$ s | $t > 2$ s | $t \leq 4$ s | 4 s $< t \leq 30$ s | $t > 30$ s |
| f = 62.2 Hz | f = $-0.686\log(t) + 62.41$ Hz | f = 61.8 Hz | f = $-0.686\log(t) + 62.21$ Hz | f = 60.7 Hz |

| Generator Underfrequency Trip Modeling | | Underfrequency Performance Characteristic | | |
|--|--|---|--|-----------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 2 \text{ s}$ | $2 \text{ s} < t \leq 60 \text{ s}$ | $t > 60 \text{ s}$ |
| $f = 57.8 \text{ Hz}$ | $f = 0.575 \log(t) + 57.63 \text{ Hz}$ | $f = 58.0 \text{ Hz}$ | $f = 0.575 \log(t) + 57.83 \text{ Hz}$ | $f = 59.3 \text{ Hz}$ |



Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R9:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a Planning Coordinator (PC) assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R10:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R15:

Requirement R15 was added in response to the directive from FERC Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. Requirement R15 addresses the FERC directive by making explicit that if deficiencies are identified as a result of an assessment, the PC shall develop a Corrective Action Plan and schedule for implementation by the UFLS entities.

A “Corrective Action Plan” is defined in the NERC Glossary of Terms as, “a list of actions and an associated timetable for implementation to remedy a specific problem.” Thus, the Corrective Action Plan developed by the PC will identify the specific timeframe for an entity to implement corrections to remedy any deficiencies identified by the PC as a result of an assessment.

A. Introduction

1. **Title:** Automatic Underfrequency Load Shedding
2. **Number:** PRC-006-~~3~~4
3. **Purpose:** To establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.
4. **Applicability:**
 - 4.1. Planning Coordinators
 - 4.2. UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:
 - 4.2.1 Transmission Owners
 - ~~4.2.2~~ 4.2.2 Distribution Providers
 - 4.2.3 UFLS-Only Distribution Providers¹
 - 4.3. Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators.

5. **Effective Date:**

[See Implementation Plan](#)

~~This standard is effective on the first day of the first calendar quarter six months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

- ~~6. **Background:**~~

~~PRC-006-2 was developed under Project 2008-02: Underfrequency Load Shedding (UFLS). The drafting team revised PRC-006-1 for the purpose of addressing the directive issued in FERC Order No. 763, *Automatic Underfrequency Load Shedding and Load Shedding Plans Reliability Standards*, 139 FERC ¶ 61,098 (2012).~~

¹ NERC Rules of Procedure, Appendix 5
https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC_ROP_Effective_20160504.pdf

B. Requirements and Measures

- R1.** Each Planning Coordinator shall develop and document criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES), including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*
- M1.** Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement R1.
- R2.** Each Planning Coordinator shall identify one or more islands to serve as a basis for designing its UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*
- 2.1.** Those islands selected by applying the criteria in Requirement R1, and
- 2.2.** Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System, and
- 2.3.** A single island that includes all portions of the BES in either the Regional Entity area or the Interconnection in which the Planning Coordinator's area resides. If a Planning Coordinator's area resides in multiple Regional Entity areas, each of those Regional Entity areas shall be identified as an island. Planning Coordinators may adjust island boundaries to differ from Regional Entity area boundaries by mutual consent where necessary for the sole purpose of producing contiguous regional islands more suitable for simulation.
- M2.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s) as a basis for designing a UFLS program that meet the criteria in Requirement R2, Parts 2.1 through 2.3.
- R3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*
- 3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
- 3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- 3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
- Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement R3, Parts 3.1 through 3.3.
- R4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- 4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - 4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - 4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - 4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - 4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.
 - 4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA

(gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.

- 4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement R4, Parts 4.1 through 4.7.
- R5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall coordinate its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island through one of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- Develop a common UFLS program design and schedule for implementation per Requirement R3 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct a joint UFLS design assessment per Requirement R4 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct an independent UFLS design assessment per Requirement R4 for the identified island, and in the event the UFLS design assessment fails to meet Requirement R3, identify modifications to the UFLS program(s) to meet Requirement R3 and report these modifications as recommendations to the other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island and the ERO.
- M5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall have dated evidence such as joint UFLS program design documents, reports describing a joint UFLS design assessment, letters that include recommendations, or other dated documentation demonstrating that it coordinated its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island per Requirement R5.
- R6.** Each Planning Coordinator shall maintain a UFLS database containing data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M6.** Each Planning Coordinator shall have dated evidence such as a UFLS database, data requests, data input forms, or other dated documentation to show that it maintained a UFLS database for use in event analyses and assessments of the UFLS program per

Requirement R6 at least once each calendar year, with no more than 15 months between maintenance activities.

- R7.** Each Planning Coordinator shall provide its UFLS database containing data necessary to model its UFLS program to other Planning Coordinators within its Interconnection within 30 calendar days of a request. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M7.** Each Planning Coordinator shall have dated evidence such as letters, memorandums, e-mails or other dated documentation that it provided their UFLS database to other Planning Coordinators within their Interconnection within 30 calendar days of a request per Requirement R7.
- R8.** Each UFLS entity shall provide data to its Planning Coordinator(s) according to the format and schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator's UFLS database. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M8.** Each UFLS Entity shall have dated evidence such as responses to data requests, spreadsheets, letters or other dated documentation that it provided data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator to support maintenance of the UFLS database per Requirement R8.
- R9.** Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. *[VRF: High][Time Horizon: Long-term Planning]*
- M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays, spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, per Requirement R9.
- R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. *[VRF: High][Time Horizon: Long-term Planning]*
- M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.
- R11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall

conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*

11.1. The performance of the UFLS equipment,

11.2. The effectiveness of the UFLS program.

M11. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted an event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement R11.

R12. Each Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*

M12. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted a UFLS design assessment per Requirements R12 and R4 if UFLS program deficiencies are identified in R11.

R13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall coordinate its event assessment (in accordance with Requirement R11) with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event through one of the following: *[VRF: Medium][Time Horizon: Operations Assessment]*

- Conduct a joint event assessment per Requirement R11 among the Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 that reaches conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 and where the assessment fails to reach conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, identify differences in the assessments that likely resulted in the differences in the conclusions and recommendations and report these differences to the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event and the ERO.

M13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same

islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall have dated evidence such as a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations, or other dated documentation demonstrating it coordinated its event assessment (per Requirement R11) with all other Planning Coordinator(s) whose areas or portions of whose areas were also included in the same islanding event per Requirement R13.

R14. Each Planning Coordinator shall respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes will be made or reasons why changes will not be made to the following [*VRF: Lower*][*Time Horizon: Long-term Planning*]:

14.1. UFLS program, including a schedule for implementation

14.2. UFLS design assessment

14.3. Format and schedule of UFLS data submittal

M14. Each Planning Coordinator shall have dated evidence of responses, such as e-mails and letters, to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program per Requirement R14.

R15. Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [*VRF: High*][*Time Horizon: Long-term Planning*]

15.1. For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.

15.2. For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.

M15. Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

Each Planning Coordinator and UFLS entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Planning Coordinator shall retain the current evidence of Requirements R1, R2, R3, R4, R5, R12, R14, and R15, Measures M1, M2, M3, M4, M5, M12, M14, and M15 as well as any evidence necessary to show compliance since the last compliance audit.
- Each Planning Coordinator shall retain the current evidence of UFLS database update in accordance with Requirement R6, Measure M6, and evidence of the prior year’s UFLS database update.
- Each Planning Coordinator shall retain evidence of any UFLS database transmittal to another Planning Coordinator since the last compliance audit in accordance with Requirement R7, Measure M7.
- Each UFLS entity shall retain evidence of UFLS data transmittal to the Planning Coordinator(s) since the last compliance audit in accordance with Requirement R8, Measure M8.
- Each UFLS entity shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R9, Measure M9, and evidence of adherence since the last compliance audit.
- Transmission Owner shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R10, Measure M10, and evidence of adherence since the last compliance audit.
- Each Planning Coordinator shall retain evidence of Requirements R11, and R13, and Measures M11, and M13 for 6 calendar years.

If a Planning Coordinator or UFLS entity is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the retention period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Violation Investigation

Self-Reporting

Complaints

1.4. Additional Compliance Information

None

2. Violation Severity Levels

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|-----------|---|---|--|
| R1 | N/A | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands.</p> <p>OR</p> <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator failed to develop and document criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> |
| R2 | N/A | <p>The Planning Coordinator identified an island(s) to</p> | <p>The Planning Coordinator identified an island(s) to serve</p> | <p>The Planning Coordinator identified an island(s) to serve</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|--|---|
| | | <p>serve as a basis for designing its UFLS program but failed to include one (1) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include two (2) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include all of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) to serve as a basis for designing its UFLS program.</p> |
| R3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet one (1) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet two (2) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet all the performance characteristic in Requirement R3, Parts 3.1, 3.2, and 3.3 in simulations of underfrequency conditions.</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|---|---|---|---|
| | | | | including notification of and a schedule for implementation by UFLS entities within its area |
| R4 | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include one (1) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include two (2) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include three (3) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 but simulation failed to include four (4) or more of the items as specified in Requirement R4, Parts 4.1 through 4.7. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2 |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| R5 | N/A | N/A | N/A | The Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, failed to coordinate its UFLS program design through one of the manners described in Requirement R5. |
| R6 | N/A | N/A | N/A | The Planning Coordinator failed to maintain a UFLS database for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. |
| R7 | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 30 calendar days and up to and including 40 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 40 calendar days but less than and including 50 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 50 calendar days but less than and including 60 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 60 calendar days following the request. OR |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | The Planning Coordinator failed to provide its UFLS database to other Planning Coordinators. |
| R8 | The UFLS entity provided data to its Planning Coordinator(s) less than or equal to 10 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 10 calendar days but less than or equal to 15 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity provided data to its Planning Coordinator(s) but the data was not according to the format specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> | The UFLS entity provided data to its Planning Coordinator(s) more than 15 calendar days but less than or equal to 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity failed to provide data to its Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> |
| R9 | The UFLS entity provided less than 100% but more than (and including) 95% of automatic tripping of Load in accordance with the UFLS | The UFLS entity provided less than 95% but more than (and including) 90% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 90% but more than (and including) 85% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 85% of automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | program design and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. |
| R10 | The Transmission Owner provided less than 100% but more than (and including) 95% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 95% but more than (and including) 90% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 90% but more than (and including) 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. |
| R11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate one (1) of the Parts as specified in Requirement R11, Parts 11.1 or 11.2.</p> | <p>conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to conduct and document an assessment of the event and evaluate the Parts as specified in Requirement R11, Parts 11.1 and 11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate all of the Parts</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | as specified in Requirement R11, Parts 11.1 and 11.2. |
| R12 | N/A | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than two years but less than or equal to 25 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 25 months but less than or equal to 26 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 26 months of event actuation. OR The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, failed to conduct and document a UFLS design assessment to consider the identified deficiencies. |
| R13 | N/A | N/A | N/A | The Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--|--|---|
| | | | | <p>program, failed to coordinate its UFLS event assessment with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event in one of the manners described in Requirement R13</p> |
| R14 | N/A | N/A | N/A | <p>The Planning Coordinator failed to respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes were made or reasons why changes were not made to the items in Parts 14.1 through 14.3.</p> |
| R15 | N/A | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|--|--|
| | | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.</p> | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.</p> | <p>R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area.</p> <p>OR</p> <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p> |

D. Regional Variances

D.A. Regional Variance for the Quebec Interconnection

The following Interconnection-wide variance shall be applicable in the Quebec Interconnection and replaces, in their entirety, Requirements R3 and R4 and the violation severity levels associated with Requirements R3 and R4.

Rationale for Requirement D.A.3:

There are two modifications for requirement D.A.3 :

1. 25% Generation Deficiency : Since the Quebec Interconnection has no potential viable BES Island in underfrequency conditions, the largest generation deficiency scenarios are limited to extreme contingencies not already covered by RAS.

Based on Hydro-Québec TransÉnergie Transmission Planning requirements, the stability of the network shall be maintained for extreme contingencies using a case representing internal transfers not expected to be exceeded 25% of the time.

The Hydro-Québec TransÉnergie defense plan to cover these extreme contingencies includes two RAS (RPTC- generation rejection and remote load shedding and TDST - a centralized UVLS) and the UFLS.

2. Frequency performance curve (attachment 1A) : Specific cases where a small generation deficiency using a peak case scenario with the minimum requirement of spinning reserve can lead to an acceptable frequency deviation in the Quebec Interconnection while stabilizing between the PRC-006-2 requirement (59.3 Hz) and the UFLS anti-stall threshold (59.0 Hz).

An increase of the anti-stall threshold to 59.3 Hz would correct this situation but would cause frequent load shedding of customers without any gain of system reliability. Therefore, it is preferable to lower the steady state frequency minimum value to 59.0 Hz.

The delay in the performance characteristics curve is harmonized between D.A.3 and R.3 to 60 seconds.

Rationale for Requirements D.A.3.3. and D.A.4:

The Quebec Interconnection has its own definition of BES. In Quebec, the vast majority of BES generating plants/facilities are not directly connected to the BES. For simulations to take into account sufficient generating resources D.A.3.3 and D.A.4 need simply refer to BES generators, plants or facilities since these are listed in a Registry approved by Québec's Regulatory Body (Régie de l'Énergie).

D.A.3. Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that

meets the following performance characteristics in simulations of underfrequency conditions resulting from each of these extreme events:

- Loss of the entire capability of a generating station.
- Loss of all transmission circuits emanating from a generating station, switching station, substation or dc terminal.
- Loss of all transmission circuits on a common right-of-way.
- Three-phase fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.
- Three-phase fault on a circuit breaker, with normal fault clearing.
- The operation or partial operation of a RAS for an event or condition for which it was not intended to operate.

[VRF: High][Time Horizon: Long-term Planning]

- D.A.3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each Quebec BES generator bus and associated generator step-up transformer high-side bus
- M.D.A.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.A.3 Parts D.A.3.1 through D.A.3.3.
- D.A.4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic

simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 for each island identified in Requirement R2. The simulation shall model each of the following; *[VRF: High][Time Horizon: Long-term Planning]*

- D.A.4.1** Underfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1A, and
 - D.A.4.2** Overfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 - Attachment 1A, and
 - D.A.4.3** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.A.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement D.A.4 Parts D.A.4.1 through D.A.4.3.

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|--|
| DA3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Parts D.A.3.1, D.A.3.2, and D.A.3.3 in simulations of underfrequency conditions</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| DA4 | N/A | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include one (1) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include two (2) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include all of the items as</p> |

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----|-----------|---|---|--|
| | | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 and D.A.4.3. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 |

D.B. Regional Variance for the Western Electricity Coordinating Council

The following Interconnection-wide variance shall be applicable in the Western Electricity Coordinating Council (WECC) and replaces, in their entirety, Requirements R1, R2, R3, R4, R5, R11, R12, and R13.

D.B.1. Each Planning Coordinator shall participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that develops and documents criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES) that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*

M.D.B.1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria, developed as part of the joint regional review with other Planning Coordinators in the WECC Regional Entity area to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement D.B.1.

D.B.2. Each Planning Coordinator shall identify one or more islands from the regional review (per D.B.1) to serve as a basis for designing a region-wide coordinated UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*

D.B.2.1. Those islands selected by applying the criteria in Requirement D.B.1, and

D.B.2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System.

M.D.B.2. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s), from the regional review (per D.B.1), as a basis for designing a region-wide coordinated UFLS program that meet the criteria in Requirement D.B.2 Parts D.B.2.1 and D.B.2.2.

D.B.3. Each Planning Coordinator shall adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*

D.B.3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- D.B.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
- D.B.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - D.B.3.3.1.** Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - D.B.3.3.2.** Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - D.B.3.3.3.** Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M.D.B.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its adoption of a UFLS program, coordinated across the WECC Regional Entity area, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.B.3 Parts D.B.3.1 through D.B.3.3.
- D.B.4.** Each Planning Coordinator shall participate in and document a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
 - D.B.4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - D.B.4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.
 - D.B.4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation

above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3 - Attachment 1.

D.B.4.4. Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.

D.B.4.5. Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.

D.B.4.6. Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3 — Attachment 1.

D.B.4.7. Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.

M.D.B.4. Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its participation in a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area that demonstrates it meets Requirement D.B.4 Parts D.B.4.1 through D.B.4.7.

D.B.11. Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall participate in and document a coordinated event assessment with all affected Planning Coordinators to conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*

D.B.11.1. The performance of the UFLS equipment,

D.B.11.2 The effectiveness of the UFLS program

M.D.B.11. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a coordinated event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement D.B.11.

- D.B.12.** Each Planning Coordinator, in whose islanding event assessment (per D.B.11) UFLS program deficiencies are identified, shall participate in and document a coordinated UFLS design assessment of the UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies within two years of event actuation. [*VRF: Medium*][*Time Horizon: Operations Assessment*]
- M.D.B.12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a UFLS design assessment per Requirements D.B.12 and D.B.4 if UFLS program deficiencies are identified in D.B.11.

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-------|-----------|--|---|--|
| D.B.1 | N/A | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> <p>OR</p> <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator failed to participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas that may form islands</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|-----------|---|--|--|
| D.B.2 | N/A | N/A | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include one (1) of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include all of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) from the regional review to serve as a basis for designing its UFLS program.</p> |
| D.B.3 | N/A | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, and D.B.3.3 in</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|--|--|--|---|
| | | simulations of underfrequency conditions | | simulations of underfrequency conditions OR The Planning Coordinator failed to adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area. |
| D.B.4 | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include one (1) of the items as specified in Requirement | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include two (2) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include three (3) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include four (4) or more of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|---------------|---|--|--|--|
| | D.B.4, Parts D.B.4.1 through D.B.4.7. | | | <p>OR</p> <p>The Planning Coordinator failed to participate in and document a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2</p> |
| D.B.11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| | <p>in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>D.B.11.1 and D.B.11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>D.B.11.1 and D.B.11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate one (1) of the parts as specified in Requirement D.B.11, Parts D.B.11.1 or D.B.11.2.</p> | <p>D.B.11.1 and D.B.11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to participate in and document a coordinated event assessment with all Planning Coordinators whose areas or portion of whose areas were also included in the same island event and evaluate the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------|-----------|---|---|---|
| | | | | <p>whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate all of the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> |
| D.B.12 | N/A | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than two years but less than or equal to 25 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 25 months but less than or equal to 26 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 26 months of event actuation.</p> <p>OR</p> <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, failed to participate in and document a coordinated UFLS design assessment of the</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--------------|----------|--|
| | | | | coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies |

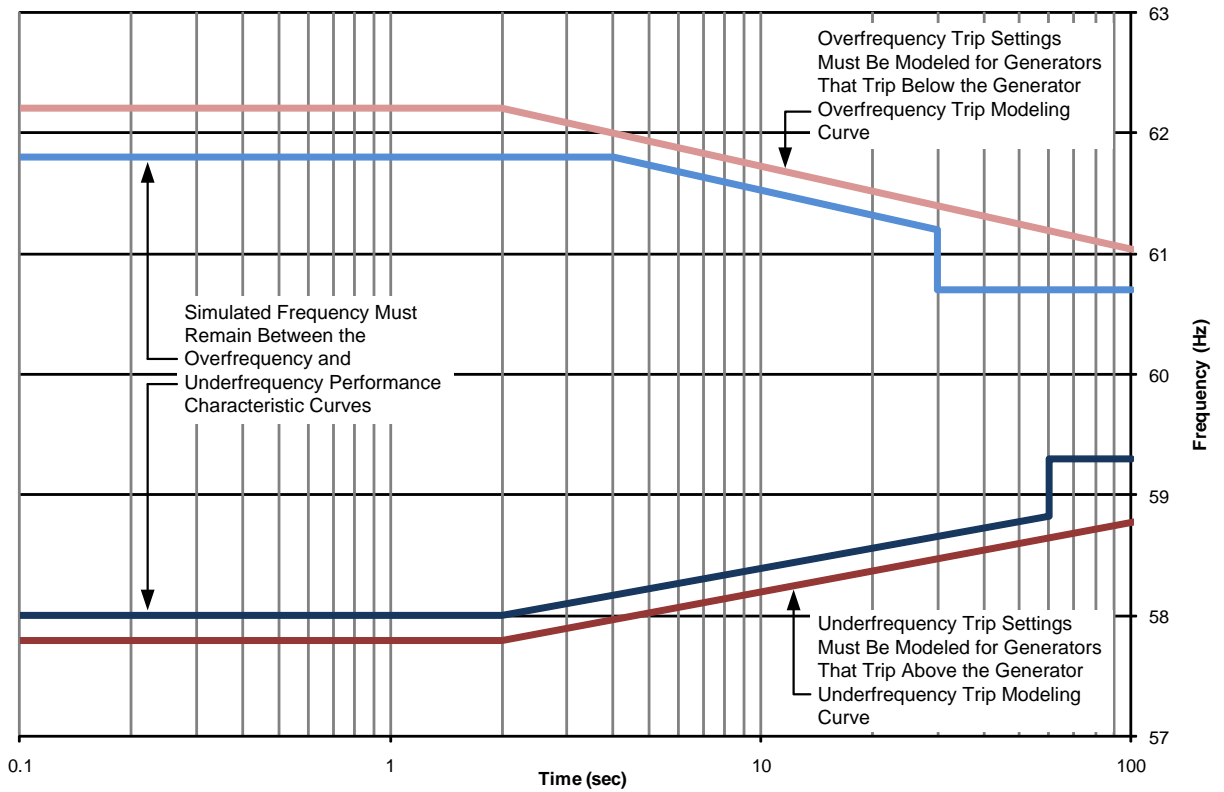
E. Associated Documents

Version History

| Version | Date | Action | Change Tracking |
|-------------------|-------------------|--|---|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | May 25, 2010 | Completed revision, merging and updating PRC-006-0, PRC-007-0 and PRC-009-0. | |
| 1 | November 4, 2010 | Adopted by the Board of Trustees | |
| 1 | May 7, 2012 | FERC Order issued approving PRC-006-1 (approval becomes effective July 10, 2012) | |
| 1 | November 9, 2012 | FERC Letter Order issued accepting the modification of the VRF in R5 from (Medium to High) and the modification of the VSL language in R8. | |
| 2 | November 13, 2014 | Adopted by the Board of Trustees | Revisions made under Project 2008-02: Undervoltage Load Shedding (UVLS) & Underfrequency Load Shedding (UFLS) to address directive issued in FERC Order No. 763. Revisions to existing Requirement R9 and R10 and addition of new Requirement R15. |
| 3 | August 10, 2017 | Adopted by the NERC Board of Trustees | Revisions to the Regional Variance for the Quebec Interconnection. |
| 4 | | Adopted by the NERC Board of Trustees | |

PRC-006-3 – Attachment 1

Underfrequency Load Shedding Program
 Design Performance and Modeling Curves for
 Requirements R3 Parts 3.1-3.2 and R4 Parts 4.1-4.6



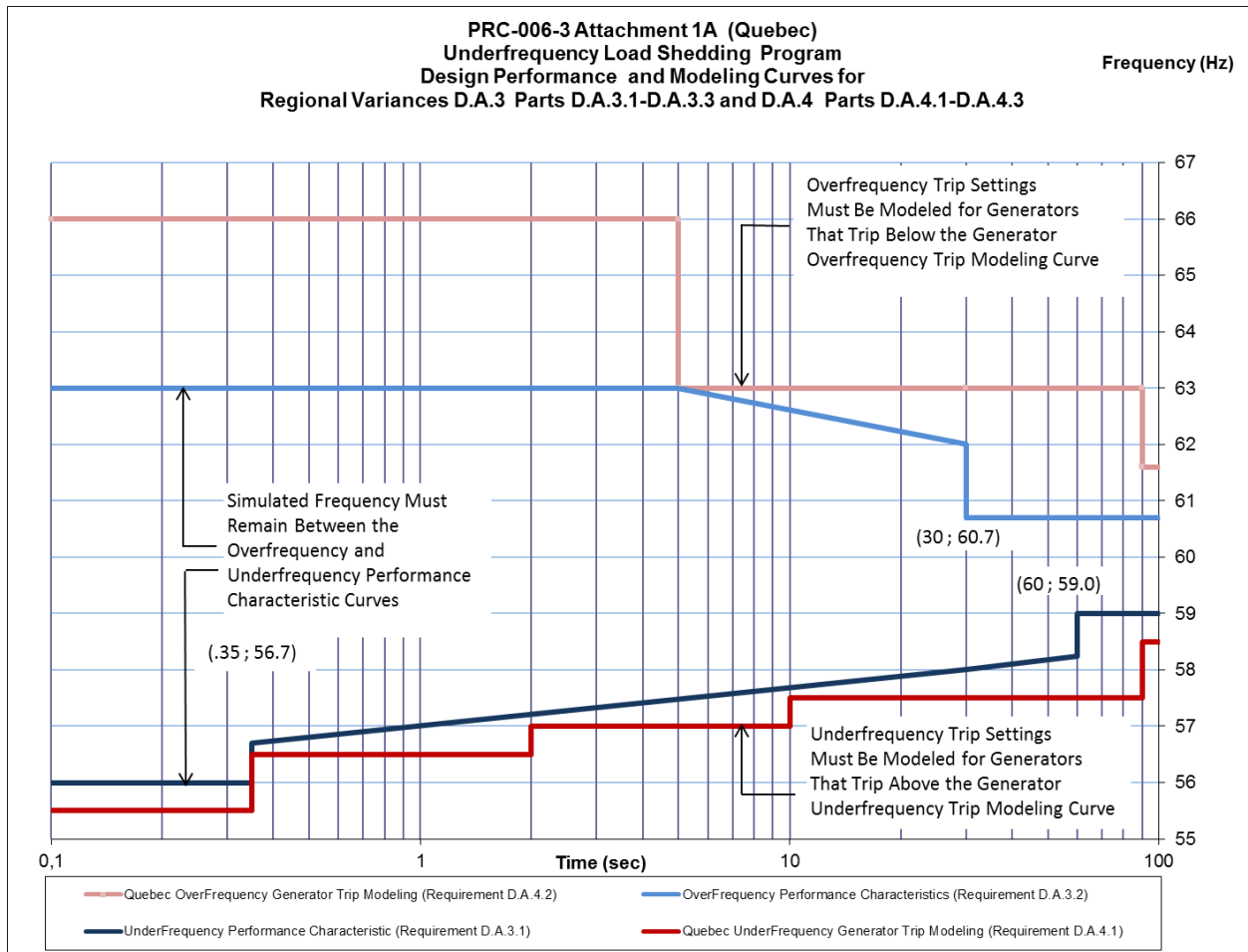
- Generator Overfrequency Trip Modeling (Requirement R4 Parts 4.4-4.6)
- Overfrequency Performance Characteristic (Requirement R3 Part 3.2)
- Underfrequency Performance Characteristic (Requirement R3 Part 3.1)
- Generator Underfrequency Trip Modeling (Requirement R4 Parts 4.1-4.3)

Curve Definitions

| Generator Overfrequency Trip Modeling | | Overfrequency Performance Characteristic | | |
|---------------------------------------|-------------------|--|-------------------------------------|--------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 4 \text{ s}$ | $4 \text{ s} < t \leq 30 \text{ s}$ | $t > 30 \text{ s}$ |

| | | | | |
|----------------|--------------------------------|----------------|--------------------------------|----------------|
| f = 62.2 Hz | f = -0.686log(t) + 62.41 Hz | f = 61.8 Hz | f = -0.686log(t) + 62.21 Hz | f = 60.7 Hz |
|----------------|--------------------------------|----------------|--------------------------------|----------------|

| Generator Underfrequency Trip Modeling | | Underfrequency Performance Characteristic | | |
|--|-------------------------------|---|-------------------------------|----------------|
| t ≤ 2 s | t > 2 s | t ≤ 2 s | 2 s < t ≤ 60 s | t > 60 s |
| f = 57.8 Hz | f = 0.575log(t) + 57.63 Hz | f = 58.0 Hz | f = 0.575log(t) + 57.83 Hz | f = 59.3 Hz |



Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R9:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a Planning Coordinator (PC) assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R10:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R15:

Requirement R15 was added in response to the directive from FERC Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. Requirement R15 addresses the FERC directive by making explicit that if deficiencies are identified as a result of an assessment, the PC shall develop a Corrective Action Plan and schedule for implementation by the UFLS entities.

A “Corrective Action Plan” is defined in the NERC Glossary of Terms as, “a list of actions and an associated timetable for implementation to remedy a specific problem.” Thus, the Corrective Action Plan developed by the PC will identify the specific timeframe for an entity to implement corrections to remedy any deficiencies identified by the PC as a result of an assessment.

A. Introduction

1. **Title: Operational Reliability Data**
2. **Number: TOP-003-4**
3. **Purpose:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.
4. **Applicability:**
 - 4.1. Transmission Operator
 - 4.2. Balancing Authority
 - 4.3. Generator Owner
 - 4.4. Generator Operator
 - 4.5. Transmission Owner
 - 4.6. Distribution Provider
5. **Effective Date:**

See Implementation Plan.

B. Requirements and Measures

- R1. Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
 - 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data as deemed necessary by the Transmission Operator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. Each Transmission Operator shall make available its dated, current, in force documented specification for data.
- R2. Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*

- 2.1. A list of data and information needed by the Balancing Authority to support its analysis functions and Real-time monitoring.
 - 2.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 2.3. A periodicity for providing data.
 - 2.4. The deadline by which the respondent is to provide the indicated data.
- M2. Each Balancing Authority shall make available its dated, current, in force documented specification for data.
- R3. Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessment. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M3. Each Transmission Operator shall make available evidence that it has distributed its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R4. Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M4. Each Balancing Authority shall make available evidence that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, or e-mail records.
- R5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations]*
 - 5.1. A mutually agreeable format
 - 5.2. A mutually agreeable process for resolving data conflicts
 - 5.3. A mutually agreeable security protocol
- M5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall make available evidence that it has satisfied the obligations of the documented specifications. Such evidence could include, but is not

limited to, electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Process

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each responsible entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

Each Transmission Operator shall retain its dated, current, in force, documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R1 and Measurement M1 as well as any documents in force since the last compliance audit.

Each Balancing Authority shall retain its dated, current, in force, documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring in accordance with Requirement R2 and Measurement M2 as well as any documents in force since the last compliance audit.

Each Transmission Operator shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R3 and Measurement M3.

Each Balancing Authority shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring in accordance with Requirement R4 and Measurement M4.

Each Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R5 and Measurement M5.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Operations Planning | Low | The Transmission Operator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include four of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Transmission Operator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|--|---------------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R2 | Operations Planning | Low | The Balancing Authority did not include one of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include two of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include three of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include four of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. OR, The Balancing Authority did not have a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. |
| <p>For the Requirement R3 and R4 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R3 | Operations Planning | Low | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to four or more entities, or more than 15% of the entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |
| R4 | Operations Planning | Low | The Balancing Authority did not distribute its data specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to two entities, or more than 5% and less than or equal to 10% of the entities, whichever is greater, that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to three entities, or more than 10% and less than or equal to 15% of the entities, whichever is greater, that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to four or more entities, or more than 15% of the entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--|--------|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R5 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet one of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet two of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet three of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | August 8, 2005 | Removed "Proposed" from Effective Date | Errata |
| 1 | | Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) | Revised |
| 1 | October 17, 2008 | Adopted by NERC Board of Trustees | |
| 1 | March 17, 2011 | Order issued by FERC approving TOP-003-1 (approval effective 5/23/11) | |
| 2 | May 6, 2012 | Revised under Project 2007-03 | Revised |
| 2 | May 9, 2012 | Adopted by Board of Trustees | Revised |
| 3 | April 2014 | Changes pursuant to Project 2014-03 | Revised |
| 3 | November 13, 2014 | Adopted by Board of Trustees | Revisions under Project 2014-03 |
| 3 | November 19, 2015 | FERC approved TOP-003-3. Docket No. RM15-16-000, Order No. 817 | |
| 4 | | Adopted by Board of Trustees | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for R1:

Changes to proposed Requirement R1, Part 1.1 are in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Transmission Operator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2 is in response to NOPR paragraph 78 on relay data. The language has been moved from approved PRC-001-1.

Corresponding changes have been made to Requirement R2 for the Balancing Authority and to proposed IRO-010-2, Requirement R1 for the Reliability Coordinator.

Rationale for R5:

Proposed Requirement R5, Part 5.3 is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

A. Introduction

1. **Title: Operational Reliability Data**
2. **Number: TOP-003-~~43~~**
3. **Purpose:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.
4. **Applicability:**
 - 4.1. Transmission Operator
 - 4.2. Balancing Authority
 - 4.3. Generator Owner
 - 4.4. Generator Operator
 - ~~4.5. Load-Serving Entity~~
 - 4.6-4.5. Transmission Owner
 - 4.7-4.6. Distribution Provider
5. **Effective Date:**

See Implementation Plan.
- ~~6. **Background:**~~

~~See Project 2014-03 project page.~~

B. Requirements and Measures

- R1. Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to:
[Violation Risk Factor: Low] [Time Horizon: Operations Planning]
 - 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data as deemed necessary by the Transmission Operator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. Each Transmission Operator shall make available its dated, current, in force documented specification for data.

- R2.** Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- 2.1.** A list of data and information needed by the Balancing Authority to support its analysis functions and Real-time monitoring.
 - 2.2.** Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 2.3.** A periodicity for providing data.
 - 2.4.** The deadline by which the respondent is to provide the indicated data.
- M2.** Each Balancing Authority shall make available its dated, current, in force documented specification for data.
- R3.** Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessment. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M3.** Each Transmission Operator shall make available evidence that it has distributed its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R4.** Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M4.** Each Balancing Authority shall make available evidence that it has distributed its data specification to entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, or e-mail records.
- R5.** Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations]*
- 5.1.** A mutually agreeable format
 - 5.2.** A mutually agreeable process for resolving data conflicts
 - 5.3.** A mutually agreeable security protocol

- M5.** Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall make available evidence that it has satisfied the obligations of the documented specifications. Such evidence could include, but is not limited to, electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Process

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each responsible entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

Each Transmission Operator shall retain its dated, current, in force, documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R1 and Measurement M1 as well as any documents in force since the last compliance audit.

Each Balancing Authority shall retain its dated, current, in force, documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring in accordance with Requirement R2 and Measurement M2 as well as any documents in force since the last compliance audit.

Each Transmission Operator shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the

Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R3 and Measurement M3.

Each Balancing Authority shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring in accordance with Requirement R4 and Measurement M4.

Each Balancing Authority, Generator Owner, Generator Operator, ~~Load Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R5 and Measurement M5.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Operations Planning | Low | The Transmission Operator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include four of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Transmission Operator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|--|---------------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R2 | Operations Planning | Low | The Balancing Authority did not include one of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include two of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include three of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include four of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. OR, The Balancing Authority did not have a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. |
| <p>For the Requirement R3 and R4 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R3 | Operations Planning | Low | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to four or more entities, or more than 15% of the entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |
| R4 | Operations Planning | Low | The Balancing Authority did not distribute its data specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to two entities, or more than 5% and less than or equal to 10% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to three entities, or more than 10% and less than or equal to 15% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to four or more entities, or more than 15% of the entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. |

Standard TOP-003-3.4 — Operational Reliability Data

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--|--------|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R5 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet one of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet two of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet three of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|---------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | August 8, 2005 | Removed “Proposed” from Effective Date | Errata |
| 1 | | Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) | Revised |
| 1 | October 17, 2008 | Adopted by NERC Board of Trustees | |
| 1 | March 17, 2011 | Order issued by FERC approving TOP-003-1 (approval effective 5/23/11) | |
| 2 | May 6, 2012 | Revised under Project 2007-03 | Revised |
| 2 | May 9, 2012 | Adopted by Board of Trustees | Revised |
| 3 | April 2014 | Changes pursuant to Project 2014-03 | Revised |
| 3 | November 13, 2014 | Adopted by Board of Trustees | Revisions under Project 2014-03 |
| 3 | November 19, 2015 | FERC approved TOP-003-3. Docket No. RM15-16-000, Order No. 817 | |
| <u>4</u> | | <u>Adopted by Board of Trustees</u> | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for R1:

Changes to proposed Requirement R1, Part 1.1 are in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Transmission Operator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2 is in response to NOPR paragraph 78 on relay data. The language has been moved from approved PRC-001-1.

Corresponding changes have been made to Requirement R2 for the Balancing Authority and to proposed IRO-010-2, Requirement R1 for the Reliability Coordinator.

Rationale for R5:

Proposed Requirement R5, Part 5.3 is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Implementation Plan

Project 2017-07 Standards Alignment with Registration

Applicable Standards

- FAC-002-3 – Facility Interconnection Studies
- IRO-010-3 – Reliability Coordinator Data Specification and Collection
- MOD-031-3 – Demand and Energy Data
- MOD-033-2 – Steady-State and Dynamic System Model Validation
- NUC-001-4 – Nuclear Plant Interface Coordination
- PRC-006-4 – Automatic Underfrequency Load Shedding
- TOP-003-4 – Operational Reliability Data

Requested Retirements

- FAC-002-2 – Facility Interconnection Studies
- IRO-010-2 – Reliability Coordinator Data Specification and Collection
- MOD-031-2 – Demand and Energy Data
- MOD-033-1 – Steady-State and Dynamic System Model Validation
- NUC-001-3 – Nuclear Plant Interface Coordination
- PRC-006-3 – Automatic Underfrequency Load Shedding
- TOP-003-3 – Operational Reliability Data

Applicable Entities

See subject standards.

Background

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system. FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria.

Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration formally addressed the remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the FAC, IRO, MOD, NUC, and TOP family of standards. References to Load-Serving Entity (LSEs) were removed or replaced by the appropriate NERC Registered Entity. PRC-006 was updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to the Applicability Section. A majority of the edits simply removed deregistered functional entities and their applicable requirements/references.

Effective Date

Reliability Standards FAC-002-3, IRO-010-3, MOD-031-3, MOD-033-2, NUC-001-4, PRC-006-4, and TOP-003-4

Where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the effective date of the applicable governmental authority's order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standards FAC-002-2, IRO-010-2, MOD-031-2, MOD-033-1, NUC-001-3, PRC-006-3, and TOP-003-3

The Reliability Standard shall be retired immediately prior to the effective date of the revised standard in the particular jurisdiction in which the revised standard is becoming effective.

Unofficial Comment Form

Project 2017-07 Standards Alignment with Registration

Do not use this form for submitting comments. Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments on **Project 2017-07 Standards Alignment with Registration** by **8 p.m. Eastern, December 12, 2019**.

Additional information is available on the [project page](#). If you have questions, contact NERC Standards Developer, [Laura Anderson](#) (via email), or at 404-446-9671.

Background Information

Project 2017-07 addresses Reliability Standards impacted by the Risk Based Registration (RBR) initiative approved by the Federal Energy Regulatory Commission (FERC) in Docket No. RR15-4-000. Some Reliability Standards require edits to align existing standards with the RBR. The standard drafting team (SDT) reviewed standards from the BAL, CIP, FAC, INT, IRO, MOD, NUC, and TOP family of standards to remove the references to the retired functions Purchasing-Selling Entity (PSE) and Interchange Authority (IA), and update references to the Load-Serving Entity (LSE) by either removing or replacing with an appropriate Registered Entity (e.g., MOD-032-1). Additionally, the SDT considered adding Underfrequency Load Shedding (UFLS)-Only Distribution Provider (UFLS-Only Distribution Provider) to the Applicability section of PRC-005 and PRC-006 per NERC registration criteria, and whether to include a definition for “UFLS-Only Distribution Provider” into the NERC Glossary of Terms; as well as review the standards to ensure consistent use of the term Planning Coordinator.

The following Reliability Standards have been identified for revision:

- FAC-002-2 is being revised to remove references to Load-Serving Entity.
- IRO-010-2 is being revised to remove references to Load-Serving Entity.
- MOD-031-2 and MOD-033-1 are being revised to change Planning Authority to Planning Coordinator.
- NUC-001-3 is being revised to remove references to Load-Serving Entity. Note: only NUC-001-3 R1 has been recommended for retirement by Standard Efficiency Review Phase 1.
- PRC-006 is being revised to add “UFLS Only- Distribution Provider” to the Applicability section.
- TOP-003-3 is being revised to remove references to Load-Serving Entity.

The following Reliability Standards were reviewed but are not being proposed for modification due to the following reasons:

- BAL-005-0.2b has been superseded by BAL-005-1 on January 1, 2019, which deleted the Load-Serving Entity function).
- CIP-002-5.1a, CIP-003-6, CIP-003-7, CIP-004-6, CIP-005-5, CIP-005-6, CIP-006-6, CIP-007-6, CIP-008-5, CIP-009-6, CIP-010-2, and CIP-011-2 will not be revised at this time due to the current Project 2016-02 (Modifications to CIP Standards) and the CIP Standards Efficiency Review.
- FAC-010-3, FAC-011-3, and FAC-014-2 are being addressed in Project 2015-09.
- INT-004-3.1 and INT-006-4 are recommended for retirement by Standard Efficiency Review Phase 1.
- MOD-001-2, MOD-004-1, MOD-020-0 are recommended for retirement by Standard Efficiency Review Phase 1.
- MOD-032-1 will not be revised at this time due to the work of the System Planning Impact from Distributed Energy Resource Working Group (SPIDERWG). In June 2018, the NERC Planning Committee (PC) formed the SPIDERWG subcommittee to address Distributed Energy Resource (DER) impacts on the bulk power system (BPS). Currently, the subcommittee has proposed a Standard Authorization Request (SAR) for MOD-032-1 pertaining to DERs. The SAR is currently under the PC review. At this time, the Project 2017-07 drafting team will not take any action in reference to the MOD-032 standard until the SPIDERWG has completed their initial efforts.
- PRC-005-6 will not be revised at this time due to the current Project 2019-04 (Modifications to PRC-005-6).

Questions

1. The SDT approach is to align the FAC-002-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Yes
 No

Comments:

2. The SDT approach is to align the IRO-010-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Yes
 No

Comments:

3. The SDT approach is to align the MOD-031-2 and MOD-033-1 standards with the RBR initiative by changing "Planning Authority" to "Planning Coordinator." Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Yes
 No

Comments:

4. The SDT approach is to align the NUC-001-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Yes
 No

Comments:

5. The SDT approach is to align the PRC-006-3 standard with the RBR initiative and the standard is being revised to add “UFLS Only- Distribution Provider” consistent with NERC registration criteria. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Yes
 No

Comments:

6. The SDT approach is to align the TOP-003-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Yes
 No

Comments:

7. Please provide any additional comments for the SDT to consider that you have not already provided for Project 2017-07.

Comments:

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, FAC-002-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for FAC-002-3, Requirement R1

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R1

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R2

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R2

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R3

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R3

This justification is provided on the following page.

VRF Justification for FAC-002-3, Requirement R4

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R4

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R5

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R5

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSLs for FAC-002-3, Requirement R3

| Lower | Moderate | High | Severe |
|--|--|---|--|
| <p>The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator.</p> |

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, IRO-010-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for IRO-010-3, Requirement R1

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R1

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R2

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R2

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R3

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R3

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-031-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-031-3, Requirement R1

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R1

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R2

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R2

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R4

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R4

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-033-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-033-2, Requirement R1

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for F MOD-033-2, Requirement R1

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VRF Justification for MOD-033-2, Requirement R2

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for MOD-033-2, Requirement R2

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, NUC-001-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

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Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
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- Operating tools and backup facilities
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- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for NUC-001-4, Requirement R1

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R1

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R2

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R2

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R3

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R3

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R4

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R4

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R5

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R5

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R6

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R6

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R7

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R7

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R8

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R8

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R9

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R9

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, PRC-006-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for PRC-006-4, Requirement R1

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R1

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R2

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R2

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R3

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R3

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R4

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R4

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R5

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R5

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R6

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R6

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R7

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R7

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R8

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R8

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R9

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R9

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R10

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R10

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R11

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R11

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R12

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R12

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R13

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R13

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R14

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R14

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R15

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R15

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, TOP-003-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

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FERC Guidelines for Violation Risk Factors

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FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

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- Protection systems and their coordination
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- Synchronized data recorders
- Clearer criteria for operationally critical facilities
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Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

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Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

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Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

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VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

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Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for TOP-003-4, Requirement R1

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R1

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R2

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R2

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R3

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R3

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R4

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R4

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R5

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R5

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

Standards Announcement

Project 2017-07 Standards Alignment with Registration

Formal Comment Period Open through December 12, 2019
Ballot Pools Forming through November 27, 2019

[Now Available](#)

A 45-day formal comment period for **Project 2017-07 Standards Alignment with Registration** is open through **8 p.m. Eastern, Thursday, December 12, 2019** for the following Standards and Implementation Plan:

- FAC-002-3 – Facility Interconnection Studies
- IRO-010-3 – Reliability Coordinator Data Specification and Collection
- MOD-031-3 – Demand and Energy Data
- MOD-033-2 – Steady-State and Dynamic System Model Validation
- NUC-001-4 – Nuclear Plant Interface Coordination
- PRC-006-4 – Automatic Underfrequency Load Shedding
- TOP-003-4 – Operational Reliability Data
- Implementation Plan

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. If you experience issues navigating the SBS, contact [Linda Jenkins](#). An unofficial Word version of the comment form is posted on the [project page](#).

- *If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Initial ballots for the Standards and Implementation Plan, along with non-binding polls for each associated Violation Risk Factors and Violation Severity Levels, will be conducted **December 3-12, 2019**.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446-9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: Project 2017-07 Standards Alignment with Registration
Comment Period Start Date: 10/29/2019
Comment Period End Date: 12/12/2019
Associated Ballots: 2017-07 Standards Alignment with Registration FAC-002-3 IN 1 ST
2017-07 Standards Alignment with Registration Implementation Plan IN 1 OT
2017-07 Standards Alignment with Registration IRO-010-3 IN 1 ST
2017-07 Standards Alignment with Registration MOD-031-3 IN 1 ST
2017-07 Standards Alignment with Registration MOD-033-2 IN 1 ST
2017-07 Standards Alignment with Registration NUC-001-4 IN 1 ST
2017-07 Standards Alignment with Registration PRC-006-4 IN 1 ST
2017-07 Standards Alignment with Registration TOP-003-4 IN 1 ST

There were 32 sets of responses, including comments from approximately 75 different people from approximately 61 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

1. The SDT approach is to align the FAC-002-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.
2. The SDT approach is to align the IRO-010-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.
3. The SDT approach is to align the MOD-031-2 and MOD-033-1 standards with the RBR initiative by changing “Planning Authority” to “Planning Coordinator.” Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.
4. The SDT approach is to align the NUC-001-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.
5. The SDT approach is to align the PRC-006-3 standard with the RBR initiative and the standard is being revised to add “UFLS Only-Distribution Provider” consistent with NERC registration criteria. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.
6. The SDT approach is to align the TOP-003-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.
7. Please provide any additional comments for the SDT to consider that you have not already provided for Project 2017-07.

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|--|----------------|----------------------|--------------|---------------------------|-------------------|--|-------------------------|---------------------|
| Douglas Webb | Douglas Webb | | MRO,SPP RE | Westar-KCPL | Doug Webb | Westar | 1,3,5,6 | MRO |
| | | | | | Doug Webb | KCP&L | 1,3,5,6 | MRO |
| Southern Company - Alabama Power Company | Joel Dembowski | 3 | | Southern Company | Adrienne Collins | Southern Company Services, Inc. | 1 | SERC |
| | | | | | Bill Shultz | Southern Company Generation | 5 | SERC |
| | | | | | Ron Carlsen | Southern Company Generation and Energy Marketing | 6 | SERC |
| | | | | | Joel Dembowski | Alabama Power Company | 3 | SERC |
| DTE Energy - Detroit Edison Company | Karie Barczak | 3,4,5 | | DTE Energy - DTE Electric | Jeffrey Depriest | DTE Energy - DTE Electric | 5 | RF |
| | | | | | Daniel Herring | DTE Energy - DTE Electric | 4 | RF |
| | | | | | Karie Barczak | DTE Energy - DTE Electric | 3 | RF |
| Duke Energy | Kim Thomas | 1,3,5,6 | FRCC,RF,SERC | Duke Energy | Laura Lee | Duke Energy | 1 | SERC |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |

| | | | |
|--------------------|---|---------------------|------|
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Michele Tondalo | UI | 1 | NPCC |
| Helen Lainis | IESO | 2 | NPCC |
| Sean Cavote | PSEG | 4 | NPCC |
| Kathleen Goodman | ISO-NE | 2 | NPCC |
| David Kiguel | Independent | NA - Not Applicable | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| Nick Kowalczyk | Orange and Rockland | 1 | NPCC |
| Joel Charlebois | AESI - Acumen Engineered Solutions International Inc. | 5 | NPCC |
| Mike Cooke | Ontario Power Generation, Inc. | 4 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Shivaz Chopra | New York Power Authority | 5 | NPCC |
| Mike Forte | Con Ed - Consolidated Edison | 4 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |

| | | | |
|-----------------|--------------------------------------|---|------|
| Ashmeet Kaur | Con Ed - Consolidated Edison | 5 | NPCC |
| Caroline Dupuis | Hydro Quebec | 1 | NPCC |
| Chantal Mazza | Hydro Quebec | 2 | NPCC |
| Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| Laura McLeod | NB Power Corporation | 5 | NPCC |
| Randy MacDonald | NB Power Corporation | 2 | NPCC |
| Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| John Hastings | National Grid | 1 | NPCC |
| Michael Jones | National Grid USA | 1 | NPCC |

1. The SDT approach is to align the FAC-002-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Marty Hostler - Northern California Power Agency - 5,6

Answer No

Document Name

Comment

I am ok with removing references to retired functions.

However, doing only this separately from normal five year review, "Technical Rationale for Reliability Standards", and "Standards Efficiency" Projects is time consuming and unnecessary and inefficient.

Likes 0

Dislikes 0

Response

Dennis Sismaet - Northern California Power Agency - 6

Answer No

Document Name

Comment

I am ok with removing references to retired functions.

However, doing only this separately from the normal five year review, "Technical Rationale for Reliability Standards", and "Standards Efficiency" Projects is time consuming and unnecessary and inefficient.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer No

Document Name

Comment

Ameren agrees with EEI and supports the removal of Load Serving Entities from this standard.

Likes 0

Dislikes 0

Response**Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC**

Answer

Yes

Document Name

Comment

None

Likes 0

Dislikes 0

Response**Steven Rueckert - Western Electricity Coordinating Council - 10**

Answer

Yes

Document Name

Comment

WECC agrees with the proposed changes but questions whether the Version History Table, last entry, should indicate Version 3 rather than Version 2. All the other Standards associated with this project identify the newly proposed version as the last entry rather than the current version.

Likes 0

Dislikes 0

Response**Daniel Gacek - Exelon - 1**

Answer

Yes

Document Name

Comment

Exelon supports the removal of Load Serving Entities from FAC-002-2.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Yes

Document Name

Comment

Texas RE noticed the following:

- In the VSL language, the word "Entity" needs to be removed in the Moderate, High, and Severe language for R3.
- On Page 8, in the Version History table, it should list version "3" in last box.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

EEI supports the removal of Load Serving Entities from this standard.

Likes 0

Dislikes 0

Response

Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Westar Energy and Kansas City Power & Light support Edison Electric Institute's response. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| John Tolo - Unisource - Tucson Electric Power Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Carl Pineault - Hydro-Quebec Production - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Trey Melcher - Lower Colorado River Authority - 1,5****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Laurie Hammack - Seattle City Light - 3****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Constantin Chitescu - Ontario Power Generation Inc. - 5****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jamie Johnson - California ISO - 2

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

faranak sarbaz - Los Angeles Department of Water and Power - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

2. The SDT approach is to align the IRO-010-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Dennis Sismaet - Northern California Power Agency - 6

Answer No

Document Name

Comment

See Response to Question 1.

Likes 0

Dislikes 0

Response

Marty Hostler - Northern California Power Agency - 5,6

Answer No

Document Name

Comment

NO. See Response to Question 1.

Likes 0

Dislikes 0

Response

Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL

Answer Yes

Document Name

Comment

Westar Energy and Kansas City Power & Light support Edison Electric Institute's response.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

EEI supports the changes proposed to IRO-10-2.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Ameren agrees with EEI and supports the changes proposed to IRO-10-2.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Texas RE noticed the word "standard" in the header on pages 7 and 8. The word "standard" does not appear in the header on the other pages.

The phrase "Corresponding changes have been made to proposed TOP-003-3." This should refer to TOP-003-4.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon supports the changes proposed to IRO-10-2.

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

None

Likes 0

Dislikes 0

Response

faranak sarbaz - Los Angeles Department of Water and Power - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jamie Johnson - California ISO - 2

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laurie Hammack - Seattle City Light - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Trey Melcher - Lower Colorado River Authority - 1,5

Answer

Yes

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Carl Pineault - Hydro-Quebec Production - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Tolo - Unisource - Tucson Electric Power Co. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Thomas Foltz - AEP - 5****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Laura Nelson - IDACORP - Idaho Power Company - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

3. The SDT approach is to align the MOD-031-2 and MOD-033-1 standards with the RBR initiative by changing “Planning Authority” to “Planning Coordinator.” Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Marty Hostler - Northern California Power Agency - 5,6

Answer No

Document Name

Comment

NO. See Response to Question 1.

Likes 0

Dislikes 0

Response

Dennis Sismaet - Northern California Power Agency - 6

Answer No

Document Name

Comment

See Response to Question 1.

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon supports the changes proposed to MOD-031-2 and MOD-033-1.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Texas RE recommends defining “Applicable Entity” since the term is capitalized and used in Requirement R2, Measure M2, Requirement R4, and Measure M4. The SDT could add the following language in section 4: “For the purpose of the requirements contained herein, the following list of functional entities will be collectively referred to as Applicable Entities. For requirements in this standard where a specific functional entity or subset of functional entities are the applicable entity or entities, the functional entity or entities are specified explicitly.” Alternatively, Texas RE recommends using the term Responsible Entity as that is the term used and defined in the CIP Reliability Standards.

Texas RE noticed the Background section was removed from MOD-033, but not in MOD-031.

Texas RE recommends adding header information regarding the Standard in the Application Guidelines for both MOD-031 and MOD-033 such as was done in IRO-010 in order to be consistent.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

| | |
|--|-----|
| Comment | |
| Ameren agrees with EEI and supports the changes proposed to MOD-031-2 and MOD-033-1. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI supports the changes proposed to MOD-031-2 and MOD-033-1. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Westar Energy and Kansas City Power & Light support Edison Electric Institute's response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response**Leonard Kula - Independent Electricity System Operator - 2****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Glen Farmer - Avista - Avista Corporation - 5****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Tolo - Unisource - Tucson Electric Power Co. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Trey Melcher - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laurie Hammack - Seattle City Light - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jamie Johnson - California ISO - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| faranak sarbaz - Los Angeles Department of Water and Power - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Carl Pineault - Hydro-Qu?bec Production - 5

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

4, The SDT approach is to align the NUC-001-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Dennis Sismaet - Northern California Power Agency - 6

Answer No

Document Name

Comment

See Response to Question 1.

Likes 0

Dislikes 0

Response

Marty Hostler - Northern California Power Agency - 5,6

Answer No

Document Name

Comment

NO. See Response to Question 1.

Likes 0

Dislikes 0

Response

Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL

Answer Yes

Document Name

Comment

Westar Energy and Kansas City Power & Light support Edison Electric Institute's response.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

EEl supports the changes proposed to NUC-001-4.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Ameren agrees with EEI and supports the changes proposed to NUC-001-4.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Texas RE noticed the Effective Date section is removed, but it exists in the previous standards reviewed (FAC-002-3, IRO-010-3, MOD-031-3, and MOD-33-2). Texas RE recommends keeping this section to be consistent.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

Exelon supports the changes proposed to NUC-001-3.

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

| |
|-----------------|
| Response |
|-----------------|

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

None

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

| |
|-----------------|
| Response |
|-----------------|

Jamie Johnson - California ISO - 2

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

| |
|-----------------|
| Response |
|-----------------|

Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Trey Melcher - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Richard Jackson - U.S. Bureau of Reclamation - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**John Tolo - Unisource - Tucson Electric Power Co. - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**LaTroy Brumfield - American Transmission Company, LLC - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 5

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

Carl Pineault - Hydro-Qu?bec Production - 5

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

5. The SDT approach is to align the PRC-006-3 standard with the RBR initiative and the standard is being revised to add "UFLS Only-Distribution Provider" consistent with NERC registration criteria. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Marty Hostler - Northern California Power Agency - 5,6

Answer No

Document Name

Comment

NO. See Response to Question 1.

Likes 0

Dislikes 0

Response

Dennis Sismaet - Northern California Power Agency - 6

Answer No

Document Name

Comment

See Response to Question 1.

Likes 0

Dislikes 0

Response

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer No

Document Name

Comment

The language should mimic the ROP such as: " Distribution Provider that operates a required UFLS" and a footnote should be used to refer the reader to the ROP. Anything less than this tends to cause confusion or result in more questions than it resolves.

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer No

Document Name

Comment

Reclamation recommends revising the applicability section to eliminate redundancy between 4.2 and 4.3. Since Transmission Owners are identified as a subset of 4.2, it is not necessary to list them as a separate applicable entity in 4.3. Reclamation recommends the SDT revise 4.2 as follows:

From: 4.2 UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:

4.2.1 Transmission Owners

4.2.2 Distribution Providers

To: 4.2 UFLS entities – all entities that are responsible for the ownership, operation, or control of UFLS equipment or Elements as required by the UFLS program established by the Planning Coordinator. Such entities may include:

4.2.1 Transmission Owners

4.2.2 Distribution Providers

4.2.3 UFLS-Only Distribution Providers

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon supports the changes proposed to PRC-006-3.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Texas RE noticed the following:

- The attachment still uses PRC-006-3. Should that be updated to PRC-006-4? Thus, Requirements R3 and R4 would need to be updated to the new attachment name. The Regional Variance for Quebec's attachment also references PRC-006-3.
- The Implementation Plan states that "PRC-006 was updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to the Applicability Section." PRC-006-4 appears to add UFLS-Only DPs and not replace DPs. Texas RE suggests revising the implementation plan to match the standard.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

"Attachment 1" (pg 37) and "Attachment 1A" (pg 39) do not have the titles changed to PRC-006-4. Reference to those two attachments show up on pages 2, 3, 4, 21, 22, 25, 26 & 27. We believe they would also need to be updated.

Also, on page 1 under Introduction > Applicability, we believe a bullet entitled "4.2.3 UFLS-Only Distribution Providers1" should be added underneath "4.2.2 Distribution Providers."

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

EI supports the changes proposed to PRC-006-4.

Likes 0

Dislikes 0

Response

Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL

Answer

Yes

Document Name

Comment

Westar Energy and Kansas City Power & Light support Edison Electric Institute's response.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer

Yes

Document Name

Comment

Please consider removing the footnote regarding NERC Rules of Procedure, Appendix 5 and link to the NERC website. The footnote appears to be unnecessary.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Yes

Document Name

Comment

OPG concurs with the RSC comment.

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| John Tolo - Unisource - Tucson Electric Power Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Trey Melcher - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laurie Hammack - Seattle City Light - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Jamie Johnson - California ISO - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

faranak sarbaz - Los Angeles Department of Water and Power - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Carl Pineault - Hydro-Quebec Production - 5

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

6. The SDT approach is to align the TOP-003-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Dennis Sismaet - Northern California Power Agency - 6

Answer No

Document Name

Comment

See Response to Question 1.

Likes 0

Dislikes 0

Response

Marty Hostler - Northern California Power Agency - 5,6

Answer No

Document Name

Comment

NO. See Response to Question 1.

Likes 0

Dislikes 0

Response

Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL

Answer Yes

Document Name

Comment

Westar Energy and Kansas City Power & Light support Edison Electric Institute's response.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

EEl supports the changes proposed to TOP-003-3.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Ameren agrees with EEl and supports the changes proposed to TOP-003-3.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Texas RE does not have any comments on the revisions to TOP-00-3. Texas RE did notice, however, that the Guidelines and Technical Basis references the incorrect version of PRC-001.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon supports the changes proposed to TOP-003-3.

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

None

Likes 0

Dislikes 0

Response

faranak sarbaz - Los Angeles Department of Water and Power - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jamie Johnson - California ISO - 2

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Teresa Cantwell - Lower Colorado River Authority - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laurie Hammack - Seattle City Light - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Trey Melcher - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Carl Pineault - Hydro-Quebec Production - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Tolo - Unisource - Tucson Electric Power Co. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

7. Please provide any additional comments for the SDT to consider that you have not already provided for Project 2017-07.

Marty Hostler - Northern California Power Agency - 5,6

Answer

Document Name

Comment

NONE

Likes 0

Dislikes 0

Response

Dennis Sismaet - Northern California Power Agency - 6

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Document Name

Comment

IRO-010-2 is also being reviewed as part of the "Technical Rationale for Reliability Standards" project (proposing to remove the Guidelines and Technical Basis section, but leaving the version number as IRO-010-2).

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name**Comment**

Texas RE noticed Section A 5 Effective Date is removed, but it remains in other standards. In general Texas RE recommends reviewing the standards to ensure this section is consistent. Texas RE noticed things such as some have 5.1 See Implementation Plan while others just say "See Implementation Plan" with no 5.1.

Texas RE suggests there is an opportunity to streamline this standard. The Applicability section lists both Generators Owners and more specific Generator Owners in section 4.1.6.1. It is likely that all Generators Owners will have these agreements so 4.1.6.1 could be removed. Thus, Requirement R5 could be removed since Requirement R2 applies to all Generator Owners.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer**Document Name****Comment**

None

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer**Document Name****Comment**

Please consider using the current NERC format for the revised standards. Please consider revising sections of the standards using current NERC wording. Example: Compliance section of the standards.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Document Name

Comment

OPG concurs with the RSC comment.

Likes 0

Dislikes 0

Response

Consideration of Comments

Project Name:

Comment Period Start Date: 10/29/2019

Comment Period End Date: 12/12/2019

Associated Ballots: 2017-07 Standards Alignment with Registration FAC-002-3 IN 1 ST
2017-07 Standards Alignment with Registration Implementation Plan IN 1 OT
2017-07 Standards Alignment with Registration IRO-010-3 IN 1 ST
2017-07 Standards Alignment with Registration MOD-031-3 IN 1 ST
2017-07 Standards Alignment with Registration MOD-033-2 IN 1 ST
2017-07 Standards Alignment with Registration NUC-001-4 IN 1 ST
2017-07 Standards Alignment with Registration PRC-006-4 IN 1 ST
2017-07 Standards Alignment with Registration TOP-003-4 IN 1 ST

There were 32 sets of responses, including comments from approximately 75 different people from approximately 61 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Vice President of Engineering and Standards, [Howard Gugel](#) (via email) or at (404) 446-9693.

Questions

1. The SDT approach is to align the FAC-002-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

2. The SDT approach is to align the IRO-010-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

3. The SDT approach is to align the MOD-031-2 and MOD-033-1 standards with the RBR initiative by changing “Planning Authority” to “Planning Coordinator.” Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

4. The SDT approach is to align the NUC-001-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

5. The SDT approach is to align the PRC-006-3 standard with the RBR initiative and the standard is being revised to add “UFLS Only-Distribution Provider” consistent with NERC registration criteria. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

6. The SDT approach is to align the TOP-003-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

[7. Please provide any additional comments for the SDT to consider that you have not already provided for Project 2017-07.](#)

The Industry Segments are:

- 1 — Transmission Owners
- 2 — RTOs, ISOs
- 3 — Load-serving Entities
- 4 — Transmission-dependent Utilities
- 5 — Electric Generators
- 6 — Electricity Brokers, Aggregators, and Marketers
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, Provincial Regulatory or other Government Entities
- 10 — Regional Reliability Organizations, Regional Entities

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|--|----------------|------------|--------------|---------------------------|-------------------|--|-------------------------|---------------------|
| Douglas Webb | Douglas Webb | | MRO,SPP RE | Westar-KCPL | Doug Webb | Westar | 1,3,5,6 | MRO |
| | | | | | Doug Webb | KCP&L | 1,3,5,6 | MRO |
| Southern Company - Alabama Power Company | Joel Dembowski | 3 | | Southern Company | Adrienne Collins | Southern Company Services, Inc. | 1 | SERC |
| | | | | | Bill Shultz | Southern Company Generation | 5 | SERC |
| | | | | | Ron Carlsen | Southern Company Generation and Energy Marketing | 6 | SERC |
| | | | | | Joel Dembowski | Alabama Power Company | 3 | SERC |
| DTE Energy - Detroit Edison Company | Karie Barczak | 3,4,5 | | DTE Energy - DTE Electric | Jeffrey Depriest | DTE Energy - DTE Electric | 5 | RF |
| | | | | | Daniel Herring | DTE Energy - DTE Electric | 4 | RF |
| | | | | | Karie Barczak | DTE Energy - DTE Electric | 3 | RF |
| Duke Energy | Kim Thomas | 1,3,5,6 | FRCC,RF,SERC | | Laura Lee | Duke Energy | 1 | SERC |

| | | | | | | | | |
|--------------------------------------|-----------|----------------------|------|-------------|------------------|--------------------------------------|----|------|
| | | | | Duke Energy | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | RSC | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |
| | | | | | David Burke | Orange & Rockland Utilities | 3 | NPCC |
| | | | | | Michele Tondalo | UI | 1 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Sean Cavote | PSEG | 4 | NPCC |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |

| | | | |
|--------------------|---|---------------------|------|
| David Kiguel | Independent | NA - Not Applicable | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 6 | NPCC |
| Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| Nick Kowalczyk | Orange and Rockland | 1 | NPCC |
| Joel Charlebois | AESI - Acumen Engineered Solutions International Inc. | 5 | NPCC |
| Mike Cooke | Ontario Power Generation, Inc. | 4 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Shivaz Chopra | New York Power Authority | 5 | NPCC |

| | | | |
|-----------------|--|---|------|
| Mike Forte | Con Ed - Consolidated Edison | 4 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Ashmeet Kaur | Con Ed - Consolidated Edison | 5 | NPCC |
| Caroline Dupuis | Hydro Quebec | 1 | NPCC |
| Chantal Mazza | Hydro Quebec | 2 | NPCC |
| Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| Laura McLeod | NB Power Corporation | 5 | NPCC |
| Randy MacDonald | NB Power Corporation | 2 | NPCC |

| | | | | | | | | |
|--|--|--|--|--|-----------------|--------------------------------------|---|------|
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | John Hastings | National Grid | 1 | NPCC |
| | | | | | Michael Jones | National Grid USA | 1 | NPCC |

1. The SDT approach is to align the FAC-002-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Summary Responses:

The SDT received comments stating: “... doing only this separately from normal five year review, "Technical Rationale for Reliability Standards", and "Standards Efficiency" Projects is time consuming and unnecessary and inefficient.” Project 2017-07 was placed on hold for a substantial period of time to allow the SDT to work closely with other project teams to address standards that needed to be aligned with Registration in projects that were already open; including Technical Rationale for Reliability Standards, periodic reviews and the Standards Efficiency Review. This collaboration eliminated many standards that this team would have otherwise taken up. Subsequent to those collaborations, this project took back up the standards that were not addressed by other projects.

The SDT updated the version number in the Version History Table in agreement with comments received. In addition, the SDT has stricken “Entity” in the VSL language.

Marty Hostler - Northern California Power Agency - 5,6

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>I am ok with removing references to retired functions.</p> <p>However, doing only this separately from normal five year review, "Technical Rationale for Reliability Standards", and "Standards Efficiency" Projects is time consuming and unnecessary and inefficient.</p> | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. This project was placed on hold for a substantial period of time to allow the SDT to work closely with other project teams to address standards that needed to be aligned with Registration in projects that were already open, including Technical Rationale for Reliability Standards, periodic reviews and the Standards Efficiency Review. This collaboration eliminated many standards that this team would have otherwise taken up. Subsequent to those collaborations, this project took back up the standards that were not addressed by other projects.

Dennis Sismaet - Northern California Power Agency - 6

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

I am ok with removing references to retired functions.

However, doing only this separately from the normal five year review, "Technical Rationale for Reliability Standards", and "Standards Efficiency" Projects is time consuming and unnecessary and inefficient.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. This project was placed on hold for a substantial period of time to allow the SDT to work closely with other project teams to address standards that needed to be aligned with Registration in projects that were already open, including Technical Rationale for Reliability Standards, periodic reviews and the Standards Efficiency Review. This collaboration eliminated many standards that this team would have otherwise taken up. Subsequent to those collaborations, this project took back up the standards that were not addressed by other projects.

David Jendras - Ameren - Ameren Services - 3

| | |
|--|-----|
| Answer | No |
| Document Name | |
| Comment | |
| Ameren agrees with EEI and supports the removal of Load Serving Entities from this standard. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your supportive comment. | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |

WECC agrees with the proposed changes but questions whether the Version History Table, last entry, should indicate Version 3 rather than Version 2. All the other Standards associated with this project identify the newly proposed version as the last entry rather than the current version.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has updated the version number in the Version History Table.

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon supports the removal of Load Serving Entities from FAC-002-2.

Likes 0

Dislikes 0

Response

Thank you for your support.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Texas RE noticed the following:

- In the VSL language, the word “Entity” needs to be removed in the Moderate, High, and Severe language for R3.
- On Page 8, in the Version History table, it should list version “3” in last box.

Likes 0

Dislikes 0

Response

Thank you for your comments. The SDT has updated the VSL language to remove the word “Entity,” as well as changed the version number in the Version History Table.

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

EEl supports the removal of Load Serving Entities from this standard.

Likes 0

Dislikes 0

Response

Thank you for your supportive comment.

Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas

City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL

Answer Yes

Document Name

Comment

Westar Energy and Kansas City Power & Light support Edison Electric Institute's response.

Likes 0

Dislikes 0

Response

Thank you for your support.

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| John Tolo - Unisource - Tucson Electric Power Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Carl Pineault - Hydro-Quebec Production - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Trey Melcher - Lower Colorado River Authority - 1,5 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Laurie Hammack - Seattle City Light - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Teresa Cantwell - Lower Colorado River Authority - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Jamie Johnson - California ISO - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| faranak sarbaz - Los Angeles Department of Water and Power - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

2. The SDT approach is to align the IRO-010-2 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Summary Responses:

Texas RE commented that the word “standard” appeared in the redline standard in the header on pages 7 and 8. The SDT has removed the word “standard” in the redline on Pages 7 and 8. In addition, Texas RE commented that the phrase “Corresponding changes have been made to proposed TOP-003-3,” and suggested this should be changed to refer to TOP-003-4. The SDT responded that the Guidelines and Technical Basis Initiative will be revising/updating the Guidelines and Technical Basis through that initiative. However, the corresponding changes referenced were made to TOP-003-3, not TOP-003-4. The SDT for Project 2017-07 made no change.

Dennis Sismaet - Northern California Power Agency - 6

| | |
|-----------------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| See Response to Question 1. | |
| Likes 0 | |
| Dislikes 0 | |

Response

Thank you. Please see response to comment in Question 1.

Marty Hostler - Northern California Power Agency - 5,6

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |

| | |
|--|-----|
| NO. See Response to Question 1. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. Please see response to comment in Question 1. | |
| Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Westar Energy and Kansas City Power & Light support Edison Electric Institute’s response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| EEl supports the changes proposed to IRO-10-2. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| David Jendras - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Ameren agrees with EEl and supports the changes proposed to IRO-10-2. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Texas RE noticed the word “standard” in the header on pages 7 and 8. The word “standard” does not appear in the header on the other pages. | |

The phrase “Corresponding changes have been made to proposed TOP-003-3.” This should refer to TOP-003-4.

Likes 0

Dislikes 0

Response

Thank you for your comments. In the redline, the word “standard” has been removed in the header on Pages 7 and 8. The Guidelines and Technical Basis Initiative will be revising/updating the Guidelines and Technical Basis through that process. In addition, the corresponding changes referenced were made to TOP-003-3, not TOP-003-4 – so no change made.

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon supports the changes proposed to IRO-10-2.

Likes 0

Dislikes 0

Response

Thank you for your support.

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

None

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| faranak sarbaz - Los Angeles Department of Water and Power - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jamie Johnson - California ISO - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Teresa Cantwell - Lower Colorado River Authority - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Laurie Hammack - Seattle City Light - 3 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Trey Melcher - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Carl Pineault - Hydro-Quebec Production - 5 | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

John Tolo - Unisource - Tucson Electric Power Co. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Laura Nelson - IDACORP - Idaho Power Company - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

| | |
|-----------------------------|--|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

3. The SDT approach is to align the MOD-031-2 and MOD-033-1 standards with the RBR initiative by changing “Planning Authority” to “Planning Coordinator.” Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Summary Response:

Comments were received recommending defining “Applicable Entity” since the term is capitalized and used in Requirement R2, Measure M2, Requirement R4, and Measure M4. The SDT responded that it would be out of scope for Project 2017-07 to define “Applicable Entity,” but pointed to “Applicable Entity,” Requirement R1, Part 1.1 of MOD-031 that reads:

- 1.1.** A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data (“Applicable Entities”).

The SDT struck the Background section in response to comments MOD-031 and updated the headers in the Rationale pages of MOD-031 and MOD-033 for consistency based on comments received.

Marty Hostler - Northern California Power Agency - 5,6

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| NO. See Response to Question 1. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you. Please see response to comment in Question 1. | |
| Dennis Sismaet - Northern California Power Agency - 6 | |
| Answer | No |

| | |
|---|-----|
| Document Name | |
| Comment | |
| See Response to Question 1. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you. Please see response to comment in Question 1. | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|---|-----|
| Exelon supports the changes proposed to MOD-031-2 and MOD-033-1. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>Texas RE recommends defining “Applicable Entity” since the term is capitalized and used in Requirement R2, Measure M2, Requirement R4, and Measure M4. The SDT could add the following language in section 4: “For the purpose of the requirements contained herein, the following list of functional entities will be collectively referred to as Applicable Entities. For requirements in this standard where a specific functional entity or subset of functional entities are the applicable entity or entities, the functional entity or entities are specified explicitly.” Alternatively, Texas RE recommends using the term Responsible Entity as that is the term used and defined in the CIP Reliability Standards.</p> <p>Texas RE noticed the Background section was removed from MOD-033, but not in MOD-031.</p> <p>Texas RE recommends adding header information regarding the Standard in the Application Guidelines for both MOD-031 and MOD-033 such as was done in IRO-010 in order to be consistent.</p> | |
| Likes | 0 |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. It is out of scope for Project 2017-07 to define Applicable Entity, but the SDT would like to point you to “Applicable Entity,” Requirement R1, Part 1.1 of MOD-031 that reads:</p> <p style="padding-left: 40px;">1.2. A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data (“Applicable Entities”).</p> <p>The Background section has been stricken from MOD-031. This team did update the header in MOD-031 and MOD-033 for consistency.</p> | |
| David Jendras - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>Ameren agrees with EEI and supports the changes proposed to MOD-031-2 and MOD-033-1.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your support.</p> | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>EEI supports the changes proposed to MOD-031-2 and MOD-033-1.</p> | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Westar Energy and Kansas City Power & Light support Edison Electric Institute's response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Laura Nelson - IDACORP - Idaho Power Company - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Thomas Foltz - AEP - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| Thank you for your support. | |
| Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| John Tolo - Unisource - Tucson Electric Power Co. - 1 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Trey Melcher - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Laurie Hammack - Seattle City Light - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Teresa Cantwell - Lower Colorado River Authority - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jamie Johnson - California ISO - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| faranak sarbaz - Los Angeles Department of Water and Power - 1 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Carl Pineault - Hydro-Quebec Production - 5 | |
| Answer | |
| Document Name | |
| Comment | |
| N/A | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

4. The SDT approach is to align the NUC-001-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Summary Responses:

Texas RE commented that the Effective Date sections needed to be updated for consistency. The SDT made the corresponding changes for consistency.

Dennis Sismaet - Northern California Power Agency - 6

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

See Response to Question 1.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you. Please see response to comment in Question 1.

Marty Hostler - Northern California Power Agency - 5,6

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

NO. See Response to Question 1.

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. Please see response to comment in Question 1. | |
| Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Westar Energy and Kansas City Power & Light support Edison Electric Institute's response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI supports the changes proposed to NUC-001-4. | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| David Jendras - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Ameren agrees with EEI and supports the changes proposed to NUC-001-4. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Texas RE noticed the Effective Date section is removed, but it exists in the previous standards reviewed (FAC-002-3, IRO-010-3, MOD-031-3, and MOD-33-2). Texas RE recommends keeping this section to be consistent. | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|---|-----|
| Response | |
| Thank you for your comments. Standards have been updated for a consistent Effective Date Section. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon supports the changes proposed to NUC-001-3. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| None | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jamie Johnson - California ISO - 2 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Trey Melcher - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| John Tolo - Unisource - Tucson Electric Power Co. - 1 | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Teresa Cantwell - Lower Colorado River Authority - 5

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

Thank you for your support.

Carl Pineault - Hydro-Quebec Production - 5

Answer

Document Name

Comment

| | |
|-----------------------------|---|
| N/A | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

5. The SDT approach is to align the PRC-006-3 standard with the RBR initiative and the standard is being revised to add “UFLS Only-Distribution Provider” consistent with NERC registration criteria. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Summary Responses:

The SDT received a comment stating that the language should mimic the ROP, as well as a comment to remove the footnote. The SDT responded that UFLS-only Distribution Provider is a Registered Entity. The SDT did include a footnote in Draft 1 of PRC-006-4 to refer the reader to the definition of UFLS-only DP in the Rules of Procedure (ROP). The link has been removed from the standard, but the SDT retained the footnote.

Comments were received that UFLS-only DP should be added underneath "4.2.2 Distribution Providers." The SDT responded that UFLS entities may or may not include UFLS owners. 4.2 are Entities that are established by the Planning Coordinators; whereas 4.3 are entities owning UFLS equipment, but are not UFLS entities. In addition, it would be out of scope for Project 2017-7 to draft changes to the Applicability Section that are not listed in the SAR for alignment with RBR.

The version number has been updated throughout the standard. The Implementation Plan has been updated to: *“PRC-006 was updated to include the more-limited UFLS-only Distribution Provider (DP) to the Applicability Section,”* in response to comments received.

Comments were received to define Applicable Entity. It would be out of scope for Project 2017-07 to define Applicable Entity, but the SDT did point the commenter to “Applicable Entity,” Requirement R1, Part 1.1 of MOD-031 that reads: *“A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data (“Applicable Entities”).”*

Marty Hostler - Northern California Power Agency - 5,6

| | |
|---------------------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| NO. See Response to Question 1. | |

| | |
|--|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. Please see response to comment in Question 1. | |
| Dennis Sismaet - Northern California Power Agency - 6 | |
| Answer | No |
| Document Name | |
| Comment | |
| See Response to Question 1. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. Please see response to comment in Question 1. | |
| Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| The language should mimic the ROP such as: " Distribution Provider that operates a required UFLS" and a footnote should be used to refer the reader to the ROP. Anything less than this tends to cause confusion or result in more questions than it resolves. | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. UFLS-only Distribution Provider is a Registered Entity. The SDT did include a footnote in Draft 1 of PRC-006-4 to refer the reader to the definition in the ROP.

Richard Jackson - U.S. Bureau of Reclamation - 1

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

Reclamation recommends revising the applicability section to eliminate redundancy between 4.2 and 4.3. Since Transmission Owners are identified as a subset of 4.2, it is not necessary to list them as a separate applicable entity in 4.3. Reclamation recommends the SDT revise 4.2 as follows:

From: 4.2 UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:

4.2.1 Transmission Owners

4.2.2 Distribution Providers

To: 4.2 UFLS entities – all entities that are responsible for the ownership, operation, or control of UFLS equipment or Elements as required by the UFLS program established by the Planning Coordinator. Such entities may include:

4.2.1 Transmission Owners

4.2.2 Distribution Providers

4.2.3 UFLS-Only Distribution Providers

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. UFLS entities may or may not include UFLS owners. 4.2 are Entities that are established by the Planning Coordinators; whereas 4.3 are entities owning UFLS equipment, but are not UFLS entities. In addition, it would be out of scope for Project 2017-7 to draft changes to the Applicability Section that are not listed in the SAR for alignment with RBR. | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| None | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon supports the changes proposed to PRC-006-3. | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Texas RE noticed the following:

- The attachment still uses PRC-006-3. Should that be updated to PRC-006-4? Thus, Requirements R3 and R4 would need to be updated to the new attachment name. The Regional Variance for Quebec’s attachment also references PRC-006-3.
- The Implementation Plan states that “PRC-006 was updated to replace Distribution Providers (DP) with the more-limited UFLS-only DP to the Applicability Section.” PRC-006-4 appears to add UFLS-Only DPs and not replace DPs. Texas RE suggests revising the implementation plan to match the standard.

Likes 0

Dislikes 0

Response

Thank you for your comments. The version number has been updated throughout the standard. The Implementation Plan has been updated to: “PRC-006 was updated to include the more limited UFLS-only Distribution Provider (DP) to the Applicability Section.”

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

"Attachment 1" (pg 37) and "Attachment 1A" (pg 39) do not have the titles changed to PRC-006-4. Reference to those two attachments show up on pages 2, 3, 4, 21, 22, 25, 26 & 27. We believe they would also need to be updated.

Also, on page 1 under Introduction > Applicability, we believe a bullet entitled "4.2.3 UFLS-Only Distribution Providers¹" should be added underneath "4.2.2 Distribution Providers."

Likes 0

Dislikes 0

Response

Thank you for your comments. The version number has been updated throughout the standard. The Implementation Plan has been updated to: "PRC-006 was updated to include the more-limited UFLS-only Distribution Provider (DP) to the Applicability Section." It is out of scope for Project 2017-07 to define Applicable Entity, but the SDT would like to point you to "Applicable Entity," Requirement R1, Part 1.1 of MOD-031 that reads:

- 1.1. A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data ("Applicable Entities").

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

EI supports the changes proposed to PRC-006-4.

Likes 0

Dislikes 0

Response

Thank you for your support.

Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Westar Energy and Kansas City Power & Light support Edison Electric Institute's response. | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Please consider removing the footnote regarding NERC Rules of Procedure, Appendix 5 and link to the NERC website. The footnote appears to be unnecessary. | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The ROP defines UFLS-only DP. The link has been removed from the standard, but the SDT retained a footnote.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer Yes

Document Name

Comment

OPG concurs with the RSC comment.

Likes 0

Dislikes 0

Response

Please see responses to RSC comment.

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Laura Nelson - IDACORP - Idaho Power Company - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Thomas Foltz - AEP - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| John Tolo - Unisource - Tucson Electric Power Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Trey Melcher - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Laurie Hammack - Seattle City Light - 3

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Teresa Cantwell - Lower Colorado River Authority - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Jamie Johnson - California ISO - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| faranak sarbaz - Los Angeles Department of Water and Power - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Carl Pineault - Hydro-Quebec Production - 5 | |
| Answer | |
| Document Name | |
| Comment | |
| N/A | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

6. The SDT approach is to align the TOP-003-3 standard with the RBR initiative by removing references to retired functions. Do you agree with the proposed changes to the standard? If you disagree, please explain and provide alternative language that will support the RBR initiative.

Summary Responses:

There was a comment received that the Guidelines and Technical Basis references the incorrect version of PRC-001. The SDT responded that the Guidelines and Technical Basis Initiative could address that comment for the version number of PRC-001, but that this change would be out of scope for Project 2017-07.

Dennis Sismaet - Northern California Power Agency - 6

| | |
|-----------------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| See Response to Question 1. | |
| Likes 0 | |
| Dislikes 0 | |

Response

Thank you. Please see response to comment in Question 1.

Marty Hostler - Northern California Power Agency - 5,6

| | |
|---------------------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| NO. See Response to Question 1. | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. Please see response to comment in Question 1. | |
| Douglas Webb - Douglas Webb On Behalf of: Allen Klassen, Westar Energy, 6, 3, 1, 5; Bryan Taggart, Westar Energy, 6, 3, 1, 5; Derek Brown, Westar Energy, 6, 3, 1, 5; Grant Wilkerson, Westar Energy, 6, 3, 1, 5; James McBee, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Jennifer Flandermeyer, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; John Carlson, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; Marcus Moor, Great Plains Energy - Kansas City Power and Light Co., 1, 3, 6, 5; - Douglas Webb, Group Name Westar-KCPL | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Westar Energy and Kansas City Power & Light support Edison Electric Institute's response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI supports the changes proposed to TOP-003-3. | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| David Jendras - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Ameren agrees with EEI and supports the changes proposed to TOP-003-3. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Texas RE does not have any comments on the revisions to TOP-00-3. Texas RE did notice, however, that the Guidelines and Technical Basis references the incorrect version of PRC-001. | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The Guidelines and Technical Basis Initiative could address your comment for version number PRC-001, but this change would be out of scope for Project 2017-07.

Daniel Gacek - Exelon - 1

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

Exelon supports the changes proposed to TOP-003-3.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your support.

Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

None

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your support.

faranak sarbaz - Los Angeles Department of Water and Power - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jamie Johnson - California ISO - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Joel Dembowski - Southern Company - Alabama Power Company - 3, Group Name Southern Company

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Bobbi Welch - Bobbi Welch On Behalf of: David Zwergel, Midcontinent ISO, Inc., 2; - Bobbi Welch | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Teresa Cantwell - Lower Colorado River Authority - 5 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Laurie Hammack - Seattle City Light - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Trey Melcher - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Carl Pineault - Hydro-Quebec Production - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| Thank you for your support. | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| John Tolo - Unisource - Tucson Electric Power Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Thomas Foltz - AEP - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

7. Please provide any additional comments for the SDT to consider that you have not already provided for Project 2017-07.

Summary Response:

There was a comment received stating that IRO-010-2 is also being reviewed as part of the “Technical Rationale for Reliability Standards” project. Project 2017-07 is proposing version 3 (IRO-010-3) and the SDT has collaborated with the Technical Rationale for Reliability Standards regarding IRO-010.

The SDT updated the Effective Date Sections for consistency in response to comments received.

Texas RE commented that there was an opportunity to streamline the standard, stating: *“The Applicability section lists both Generators Owners and more specific Generator Owners in section 4.1.6.1. It is likely that all Generators Owners will have these agreements so 4.1.6.1 could be removed. Thus, Requirement R5 could be removed since Requirement R2 applies to all Generator Owners.”* The SDT responded that Generator Owners in Applicability Section would be out of scope for Project 2017-07.

Marty Hostler - Northern California Power Agency - 5,6

| | |
|--|--|
| Answer | |
| Document Name | |
| Comment | |
| NONE | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Dennis Sismaet - Northern California Power Agency - 6 | |
| Answer | |

| | |
|---|--|
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Aaron Cavanaugh - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | |
| Document Name | |
| Comment | |

IRO-010-2 is also being reviewed as part of the “Technical Rationale for Reliability Standards” project (proposing to remove the Guidelines and Technical Basis section, but leaving the version number as IRO-010-2).

Likes 0

Dislikes 0

Response

Project 2017-07 is proposing version 3 (IRO-010-3). The SDT has collaborated with the Technical Rationale for Reliability Standards regarding IRO-010.

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer

Document Name

Comment

| | |
|---|---|
| None. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Texas RE noticed Section A 5 Effective Date is removed, but it remains in other standards. In general Texas RE recommends reviewing the standards to ensure this section is consistent. Texas RE noticed things such as some have 5.1 See Implementation Plan while others just say “See Implementation Plan” with no 5.1.</p> <p>Texas RE suggests there is an opportunity to streamline this standard. The Applicability section lists both Generators Owners and more specific Generator Owners in section 4.1.6.1. It is likely that all Generators Owners will have these agreements so 4.1.6.1 could be removed. Thus, Requirement R5 could be removed since Requirement R2 applies to all Generator Owners.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. The SDT updated the Effective Date Sections for consistency. Generator Owners in Applicability Section would be out of scope for Project 2017-07.</p> | |

David Jendras - Ameren - Ameren Services - 3

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name RSC

Answer

Document Name

Comment

Please consider using the current NERC format for the revised standards. Please consider revising sections of the standards using current NERC wording. Example: Compliance section of the standards.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

| | |
|----------------------|---|
| Document Name | |
| Comment | |
| | OPG concurs with the RSC comment. |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | Thank you for your comment. Please see response to RSC comment. |

Standards Announcement

Project 2017-07 Standards Alignment with Registration

Formal Comment Period Open through December 12, 2019
Ballot Pools Forming through November 27, 2019

[Now Available](#)

A 45-day formal comment period for **Project 2017-07 Standards Alignment with Registration** is open through **8 p.m. Eastern, Thursday, December 12, 2019** for the following Standards and Implementation Plan:

- FAC-002-3 – Facility Interconnection Studies
- IRO-010-3 – Reliability Coordinator Data Specification and Collection
- MOD-031-3 – Demand and Energy Data
- MOD-033-2 – Steady-State and Dynamic System Model Validation
- NUC-001-4 – Nuclear Plant Interface Coordination
- PRC-006-4 – Automatic Underfrequency Load Shedding
- TOP-003-4 – Operational Reliability Data
- Implementation Plan

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. If you experience issues navigating the SBS, contact [Linda Jenkins](#). An unofficial Word version of the comment form is posted on the [project page](#).

- *If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Initial ballots for the Standards and Implementation Plan, along with non-binding polls for each associated Violation Risk Factors and Violation Severity Levels, will be conducted **December 3-12, 2019**.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446-9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration FAC-002-3 IN 1 ST

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 229

Total Ballot Pool: 258

Quorum: 88.76

Quorum Established Date: 12/12/2019 3:11:16 PM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 59 | 1 | 0 | 0 | 0 | 4 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 49 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 62 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 2 | 10 |
| Segment: 6 | 46 | 1 | 36 | 1 | 0 | 0 | 0 | 2 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 258 | 6.4 | 218 | 6.38 | 1 | 0.02 | 0 | 10 | 29 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Affirmative | N/A |
| 1 | PPL Electric Utilities | Brenda Truhe | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson | John Tolo | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD | Holly Chaney | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County RPD | Debra Carlson | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|----------------------|-------------------------|---------------|------------------|
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration IRO-010-3 IN 1 ST

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 227

Total Ballot Pool: 255

Quorum: 89.02

Quorum Established Date: 12/12/2019 3:05:39 PM

Weighted Segment Value: 99.36

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 53 | 1 | 48 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 14 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 2 |
| Segment: 5 | 61 | 1 | 47 | 0.959 | 2 | 0.041 | 0 | 2 | 10 |
| Segment: 6 | 46 | 1 | 36 | 1 | 0 | 0 | 0 | 2 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 255 | 6.4 | 216 | 6.359 | 2 | 0.041 | 0 | 9 | 28 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Affirmative | N/A |
| 1 | PPL Electric Utilities | Brenda Truhe | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson | John Tolo | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|--------------------|
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Negative | Comments Submitted |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|----------------------|------------------|-------------|-----------|
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirchak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric | Daniel Mason | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration MOD-031-3 IN 1 ST

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 227

Total Ballot Pool: 255

Quorum: 89.02

Quorum Established Date: 12/12/2019 3:11:54 PM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 53 | 1 | 48 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 60 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 1 | 9 |
| Segment: 6 | 46 | 1 | 36 | 1 | 0 | 0 | 0 | 2 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 255 | 6.4 | 218 | 6.38 | 1 | 0.02 | 0 | 8 | 28 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Affirmative | N/A |
| 1 | PPL Electric Utilities | Brenda Truhe | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson | John Tolo | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Coconino County RFD | Debra Carlson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA LLC | Eric Smith | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|----------------------|------------------|-------------|-----------|
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration MOD-033-2 IN 1 ST

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 226

Total Ballot Pool: 254

Quorum: 88.98

Quorum Established Date: 12/12/2019 3:12:42 PM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 59 | 1 | 0 | 0 | 0 | 4 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 53 | 1 | 48 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 60 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 1 | 9 |
| Segment: 6 | 45 | 1 | 35 | 1 | 0 | 0 | 0 | 2 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 254 | 6.4 | 216 | 6.38 | 1 | 0.02 | 0 | 9 | 28 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Affirmative | N/A |
| 1 | PPL Electric Utilities | Brenda Truhe | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson | John Tolo | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County RPD | Debra Carlson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA LLC | Eric Smith | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|----------------------|------------------|-------------|-----------|
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration NUC-001-4 IN 1 ST

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 206

Total Ballot Pool: 229

Quorum: 89.96

Quorum Established Date: 12/12/2019 3:07:47 PM

Weighted Segment Value: 99.59

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 56 | 1 | 44 | 1 | 0 | 0 | 0 | 9 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 50 | 1 | 41 | 1 | 0 | 0 | 0 | 5 | 4 |
| Segment: 4 | 12 | 0.9 | 9 | 0.9 | 0 | 0 | 0 | 2 | 1 |
| Segment: 5 | 55 | 1 | 38 | 0.974 | 1 | 0.026 | 0 | 7 | 9 |
| Segment: 6 | 41 | 1 | 29 | 1 | 0 | 0 | 0 | 7 | 5 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 229 | 6.3 | 175 | 6.274 | 1 | 0.026 | 0 | 30 | 23 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Abstain | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | None | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Abstain | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Abstain | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santa Ana Electric Service Company | Chris Wagner | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Abstain | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Abstain | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Abstain | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Abstain | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Abstain | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Abstain | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|----------------------|-------------------------|---------------|------------------|
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Abstain | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Abstain | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Abstain | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Abstain | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Abstain | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--------------------------------|-------------------|------------------|-------------|-----------|
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

Showing 1 to 229 of 229 entries

Previous 1 Next

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration PRC-006-4 IN 1 ST

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 228

Total Ballot Pool: 256

Quorum: 89.06

Quorum Established Date: 12/12/2019 3:09:53 PM

Weighted Segment Value: 99.38

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 59 | 1 | 0 | 0 | 0 | 4 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 49 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 60 | 1 | 48 | 0.96 | 2 | 0.04 | 0 | 1 | 9 |
| Segment: 6 | 46 | 1 | 36 | 1 | 0 | 0 | 0 | 2 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 256 | 6.4 | 217 | 6.36 | 2 | 0.04 | 0 | 9 | 28 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Affirmative | N/A |
| 1 | PPL Electric Utilities | Brenda Truhe | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson | John Tolo | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD | Holly Chaney | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Coahuila County RFD | Debra Carlson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA LLC | Eric Smith | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|----------------------|-------------------------|---------------|--------------------|
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Negative | Comments Submitted |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration TOP-003-4 IN 1 ST

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 228

Total Ballot Pool: 257

Quorum: 88.72

Quorum Established Date: 12/12/2019 3:14:18 PM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 48 | 1 | 0 | 0 | 0 | 1 | 5 |
| Segment: 4 | 14 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 2 |
| Segment: 5 | 62 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 2 | 10 |
| Segment: 6 | 46 | 1 | 36 | 1 | 0 | 0 | 0 | 2 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 257 | 6.4 | 218 | 6.38 | 1 | 0.02 | 0 | 9 | 29 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Affirmative | N/A |
| 1 | PPL Electric Utilities | Brenda Truhe | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson | John Tolo | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | None | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD | Holly Chaney | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County RPD | Debra Carlson | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|----------------------|-------------------------|---------------|------------------|
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/183)

Ballot Name: 2017-07 Standards Alignment with Registration Implementation Plan IN 1 OT

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: OT

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 225

Total Ballot Pool: 256

Quorum: 87.89

Quorum Established Date: 12/12/2019 3:17:40 PM

Weighted Segment Value: 99.68

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 57 | 1 | 0 | 0 | 0 | 5 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 48 | 1 | 0 | 0 | 0 | 2 | 4 |
| Segment: 4 | 14 | 1 | 10 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 62 | 1 | 48 | 0.98 | 1 | 0.02 | 0 | 3 | 10 |
| Segment: 6 | 45 | 1 | 34 | 1 | 0 | 0 | 0 | 2 | 9 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 1 |
| Segment: 1 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 256 | 6.4 | 211 | 6.38 | 1 | 0.02 | 0 | 13 | 31 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Affirmative | N/A |
| 1 | PPL Electric Utilities | Brenda Truhe | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson | John Tolo | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------|-------------------|-------------|-----------|
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD | Holly Chaney | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Municipal Energy Agency of Nebraska | Brittany Millard | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Coahuila County RFD | Debra Carlson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|----------------------|-------------------------|---------------|------------------|
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | None | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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Showing 1 to 256 of 256 entries

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration FAC-002-3 Non-binding Poll IN 1 NB

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: NB

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 214

Total Ballot Pool: 246

Quorum: 86.99

Quorum Established Date: 12/12/2019 3:46:02 PM

Weighted Segment Value: 99.44

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 62 | 1 | 44 | 1 | 0 | 0 | 14 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |
| Segment: 3 | 53 | 1 | 41 | 1 | 0 | 0 | 7 | 5 |
| Segment: 4 | 13 | 1 | 10 | 1 | 0 | 0 | 1 | 2 |
| Segment: 5 | 59 | 1 | 40 | 0.976 | 1 | 0.024 | 8 | 10 |
| Segment: 6 | 44 | 1 | 28 | 1 | 0 | 0 | 6 | 10 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 1 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 |
| Segment: 6 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|---------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Totals: | 246 | 6.4 | 177 | 6.376 | 1 | 0.024 | 36 | 32 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Abstain | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Abstain | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Abstain | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Abstain | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazilyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-----------------------|-------------------------|---------------|------------------|
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Abstain | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|--------------------|
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Abstain | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|------------------|
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | Wester Energy | Derek Brown | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | None | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Abstain | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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Showing 1 to 246 of 246 entries

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration IRO-010-3 Non-binding Poll IN 1 NB

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: NB

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 212

Total Ballot Pool: 242

Quorum: 87.6

Quorum Established Date: 12/12/2019 3:32:33 PM

Weighted Segment Value: 99.43

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 62 | 1 | 45 | 1 | 0 | 0 | 13 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |
| Segment: 3 | 51 | 1 | 39 | 1 | 0 | 0 | 7 | 5 |
| Segment: 4 | 12 | 1 | 10 | 1 | 0 | 0 | 1 | 1 |
| Segment: 5 | 58 | 1 | 39 | 0.975 | 1 | 0.025 | 8 | 10 |
| Segment: 6 | 44 | 1 | 28 | 1 | 0 | 0 | 7 | 9 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 1 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 |
| Segment: | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|---------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Totals: | 242 | 6.4 | 175 | 6.375 | 1 | 0.025 | 36 | 30 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Abstain | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Abstain | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Abstain | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Abstain | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-----------------------|-------------------------|---------------|------------------|
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Abstain | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Québec Power Production | Chris Swire | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|---------------------|-------------------------|---------------|--------------------|
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Abstain | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Okemaw County | Meaghan Connell | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - Pacific Corp | Sandra Shaffer | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

Showing 1 to 242 of 242 entries

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Next

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration MOD-031-3 Non-binding Poll IN 1 NB

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: NB

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 211

Total Ballot Pool: 242

Quorum: 87.19

Quorum Established Date: 12/12/2019 3:46:26 PM

Weighted Segment Value: 99.43

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 62 | 1 | 45 | 1 | 0 | 0 | 13 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |
| Segment: 3 | 51 | 1 | 38 | 1 | 0 | 0 | 7 | 6 |
| Segment: 4 | 13 | 1 | 10 | 1 | 0 | 0 | 1 | 2 |
| Segment: 5 | 57 | 1 | 40 | 0.976 | 1 | 0.024 | 7 | 9 |
| Segment: 6 | 44 | 1 | 28 | 1 | 0 | 0 | 7 | 9 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 1 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 |
| Segment: | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|---------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Totals: | 242 | 6.4 | 175 | 6.376 | 1 | 0.024 | 35 | 31 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Abstain | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Abstain | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Abstain | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Abstain | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|-----------|
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Abstain | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | | None | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Labrador Electric | Eric Swoboda | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|---------------------|-------------------------|---------------|--------------------|
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Abstain | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Abstain | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

Previous

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Showing 1 to 242 of 242 entries

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration MOD-033-2 Non-binding Poll IN 1 NB

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: NB

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 210

Total Ballot Pool: 242

Quorum: 86.78

Quorum Established Date: 12/12/2019 3:51:48 PM

Weighted Segment Value: 99.43

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 62 | 1 | 44 | 1 | 0 | 0 | 14 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |
| Segment: 3 | 52 | 1 | 39 | 1 | 0 | 0 | 7 | 6 |
| Segment: 4 | 13 | 1 | 10 | 1 | 0 | 0 | 1 | 2 |
| Segment: 5 | 57 | 1 | 40 | 0.976 | 1 | 0.024 | 7 | 9 |
| Segment: 6 | 43 | 1 | 26 | 1 | 0 | 0 | 7 | 10 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 1 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 |
| Segment: 6 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|---------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Totals: | 242 | 6.4 | 173 | 6.376 | 1 | 0.024 | 36 | 32 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Abstain | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Abstain | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Abstain | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Abstain | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|-----------|
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Abstain | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|---------------------|-------------------------|---------------|--------------------|
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Abstain | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power | Tyson Archie | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochenogor | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service | Joe O'Brien | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | None | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Abstain | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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Showing 1 to 242 of 242 entries

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration NUC-001-4 Non-binding Poll IN 1 NB

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: NB

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 192

Total Ballot Pool: 219

Quorum: 87.67

Quorum Established Date: 12/12/2019 3:47:00 PM

Weighted Segment Value: 99.31

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 53 | 1 | 34 | 1 | 0 | 0 | 15 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |
| Segment: 3 | 49 | 1 | 34 | 1 | 0 | 0 | 9 | 6 |
| Segment: 4 | 11 | 0.8 | 8 | 0.8 | 0 | 0 | 2 | 1 |
| Segment: 5 | 52 | 1 | 31 | 0.969 | 1 | 0.031 | 12 | 8 |
| Segment: 6 | 39 | 1 | 22 | 1 | 0 | 0 | 10 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 1 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 |
| Segment: 6 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|---------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Totals: | 219 | 6.2 | 143 | 6.169 | 1 | 0.031 | 48 | 27 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Abstain | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Abstain | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Abstain | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | None | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Abstain | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Abstain | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Abstain | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Abstain | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Abstain | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | | None | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Abstain | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Energy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Chris Bee | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|--------------------|
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Abstain | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Abstain | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Abstain | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Abstain | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Abstain | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Abstain | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | None | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Abstain | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Abstain | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration PRC-006-4 Non-binding Poll IN 1 NB

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: NB

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 209

Total Ballot Pool: 242

Quorum: 86.36

Quorum Established Date: 12/12/2019 3:52:42 PM

Weighted Segment Value: 98.84

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 62 | 1 | 44 | 1 | 0 | 0 | 14 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |
| Segment: 3 | 51 | 1 | 37 | 1 | 0 | 0 | 7 | 7 |
| Segment: 4 | 13 | 1 | 10 | 1 | 0 | 0 | 1 | 2 |
| Segment: 5 | 57 | 1 | 39 | 0.951 | 2 | 0.049 | 7 | 9 |
| Segment: 6 | 44 | 1 | 27 | 1 | 0 | 0 | 7 | 10 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 1 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 |
| Segment: | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|---------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Totals: | 242 | 6.4 | 171 | 6.351 | 2 | 0.049 | 36 | 33 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Abstain | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Abstain | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Abstain | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Abstain | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|-----------|
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | None | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Abstain | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | | None | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Labrador Electric | Eric Swoboda | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|---------------------|-------------------------|---------------|--------------------|
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Abstain | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|--------------------|
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Negative | Comments Submitted |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luiggi Beretta | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | None | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Abstain | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration TOP-003-4 Non-binding Poll IN 1 NB

Voting Start Date: 12/3/2019 12:01:00 AM

Voting End Date: 12/12/2019 8:00:00 PM

Ballot Type: NB

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 211

Total Ballot Pool: 244

Quorum: 86.48

Quorum Established Date: 12/12/2019 3:53:05 PM

Weighted Segment Value: 99.43

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 62 | 1 | 45 | 1 | 0 | 0 | 13 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |
| Segment: 3 | 52 | 1 | 38 | 1 | 0 | 0 | 7 | 7 |
| Segment: 4 | 12 | 1 | 10 | 1 | 0 | 0 | 1 | 1 |
| Segment: 5 | 59 | 1 | 40 | 0.976 | 1 | 0.024 | 8 | 10 |
| Segment: 6 | 44 | 1 | 27 | 1 | 0 | 0 | 7 | 10 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 1 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 |
| Segment: 6 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|---------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Totals: | 244 | 6.4 | 174 | 6.376 | 1 | 0.024 | 36 | 33 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | John Shaver | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Abstain | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Abstain | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Abstain | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Nathaniel Clague | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Jeff Kimbell | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Steven Cobb | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 2 | Midcontinent ISO, Inc. | David Zwergel | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Abstain | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|-----------|
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | None | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Kristine Ward | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Abstain | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|---------------------|-------------------------|---------------|--------------------|
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Don Schmit | | Abstain | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power | Tyson Archie | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|-------------------|-------------|-----------|
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | None | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy, Florida Power and Light Co. | Justin Welty | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | None | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company | Ron Carlsen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Tacoma Public Utilities (Tacoma, WA) | Rick Applegate | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Abstain | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | None | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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Previous

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Next

A. Introduction

1. **Title:** Facility Interconnection Studies
2. **Number:** FAC-002-3
3. **Purpose:** To study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Transmission Owner
 - 4.1.4 Distribution Provider
 - 4.1.5 Generator Owner
 - 4.1.6 Applicable Generator Owner
 - 4.1.6.1 Generator Owner with a fully executed Agreement to conduct a study on the reliability impact of interconnecting a third party Facility to the Generator Owner's existing Facility that is used to interconnect to the Transmission system.
5. **Effective Date:** See Implementation Plan

B. Requirements and Measures

- R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities. The following shall be studied:
[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]
 - 1.1. The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system(s);
 - 1.2. Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
 - 1.3. Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions; and
 - 1.4. Study assumptions, system performance, alternatives considered, and coordinated recommendations. While these studies may be performed independently, the results shall be evaluated and coordinated by the entities involved.

- M1.** Each Transmission Planner or each Planning Coordinator shall have evidence (such as study reports, including documentation of reliability issues) that it met all requirements in Requirement R1.
- R2.** Each Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** Each Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R2.
- R3.** Each Transmission Owner and each Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Owner and each Distribution Provider shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R3.
- R4.** Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M4.** Each Transmission Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R4.
- R5.** Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M5.** Each applicable Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R5.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Planning Coordinator, Transmission Planner, Transmission Owner, Distribution Provider, Generator Owner and applicable Generator Owner shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for three years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Check

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities, but failed to study one of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study two of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study three of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator failed to study the reliability impact of: interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of, generation, transmission, or electricity end-user Facilities. |
| R2 | Long-term Planning | Medium | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|---|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator. |
| R3 | Long-term Planning | Medium | The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but | The Transmission Owner, or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but | The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed | The Transmission Owner, or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator. |
| R4 | Long-term Planning | Medium | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities. |
| R5 | Long-term Planning | Medium | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning | The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning | The applicable Generator Owner failed to coordinate and cooperate on studies with its Transmission Planner |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | or Planning Coordinator regarding requested interconnections to its Facilities. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None

Application Guidelines

Guidelines and Technical Basis

Entities should have documentation to support the technical rationale for determining whether an existing interconnection was “materially modified.” Recognizing that what constitutes a “material modification” will vary from entity to entity, the intent is for this determination to be based on engineering judgment.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|--------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | January 13, 2006 | Removed duplication of “Regional Reliability Organizations(s).” | Errata |
| 1 | August 5, 2010 | Modified to address Order No. 693 Directives contained in paragraph 693. Adopted by the NERC Board of Trustees. | Revised |
| 1 | February 7, 2013 | R2 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 1 | November 21, 2013 | R2 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2 | | Revisions to implement the recommendations of the FAC Five-Year Review Team. | Revision under Project 2010-02 |
| 2 | August 14, 2014 | Adopted by the Board of Trustees. | |
| 2 | November 6, 2014 | FERC letter order issued approving FAC-002-2. | |
| 3 | | Adopted by the Board of Trustees. | |

A. Introduction

1. **Title:** Facility Interconnection Studies
2. **Number:** FAC-002-3
3. **Purpose:** To study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Transmission Owner
 - 4.1.4 Distribution Provider
 - 4.1.5 Generator Owner
 - 4.1.6 Applicable Generator Owner
 - 4.1.6.1 Generator Owner with a fully executed Agreement to conduct a study on the reliability impact of interconnecting a third party Facility to the Generator Owner's existing Facility that is used to interconnect to the Transmission system.
5. **Effective Date:** See Implementation Plan

B. Requirements and Measures

- R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities. The following shall be studied: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
 - 1.1. The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system(s);
 - 1.2. Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
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- M2.** Each Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R2.
- R3.** Each Transmission Owner and each Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Owner and each Distribution Provider shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R3.
- R4.** Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M4.** Each Transmission Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R4.
- R5.** Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M5.** Each applicable Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R5.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

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The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Check

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities, but failed to study one of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study two of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study three of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator failed to study the reliability impact of: interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of, generation, transmission, or electricity end-user Facilities. |
| R2 | Long-term Planning | Medium | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|---|---|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator. |
| R3 | Long-term Planning | Medium | The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but | The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning | The Transmission Owner or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning | The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator. |
| R4 | Long-term Planning | Medium | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities. |
| R5 | Long-term Planning | Medium | The applicable Generator Owner coordinated and cooperated on studies with its Transmission | The applicable Generator Owner coordinated and cooperated on studies with its Transmission | The applicable Generator Owner coordinated and cooperated on studies with its Transmission | The applicable Generator Owner failed to coordinate and cooperate on studies with its |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None

Guidelines and Technical Basis

Entities should have documentation to support the technical rationale for determining whether an existing interconnection was “materially modified.” Recognizing that what constitutes a “material modification” will vary from entity to entity, the intent is for this determination to be based on engineering judgment.

Version History

| Version | Date | Action | Change Tracking |
|--------------|-------------------|--|--------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | January 13, 2006 | Removed duplication of “Regional Reliability Organizations(s).” | Errata |
| 1 | August 5, 2010 | Modified to address Order No. 693 Directives contained in paragraph 693. Adopted by the NERC Board of Trustees. | Revised |
| 1 | February 7, 2013 | R2 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 1 | November 21, 2013 | R2 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2 | | Revisions to implement the recommendations of the FAC Five-Year Review Team. | Revision under Project 2010-02 |
| 2 | August 14, 2014 | Adopted by the Board of Trustees. | |
| 2 | November 6, 2014 | FERC letter order issued approving FAC-002-2. | |
| 2 | | Adopted by the Board of Trustees. | |

A. Introduction

1. **Title:** Facility Interconnection Studies
2. **Number:** FAC-002-~~32~~
3. **Purpose:** To study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Transmission Planner
 - 4.1.3 Transmission Owner
 - 4.1.4 Distribution Provider
 - 4.1.5 Generator Owner
 - 4.1.6 Applicable Generator Owner
 - 4.1.6.1 Generator Owner with a fully executed Agreement to conduct a study on the reliability impact of interconnecting a third party Facility to the Generator Owner’s existing Facility that is used to interconnect to the Transmission system.
 - ~~4.1.7 Load Serving Entity~~
5. **Effective Date:** ~~See Implementation Plan. The first day of the first calendar quarter that is one year after the date that this standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is one year after the date this standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~ See Implementation Plan.

B. Requirements and Measures

- R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities. The following shall be studied:
[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]
 - 1.1. The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system(s);
 - 1.2. Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
 - 1.3. Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions; and

- 1.4. Study assumptions, system performance, alternatives considered, and coordinated recommendations. While these studies may be performed independently, the results shall be evaluated and coordinated by the entities involved.
- M1. Each Transmission Planner or each Planning Coordinator shall have evidence (such as study reports, including documentation of reliability issues) that it met all requirements in Requirement R1.
- R2. Each Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2. Each Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R2.
- R3. Each Transmission Owner, and each Distribution Provider, ~~and each Load-Serving Entity~~ seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3. Each Transmission Owner, and each Distribution Provider, ~~and each Load-Serving Entity~~ shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R3.
- R4. Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M4. Each Transmission Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R4.
- R5. Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M5. Each applicable Generator Owner shall have evidence (such as documents containing the data provided in response to the requests of the Transmission Planner or Planning Coordinator) that it met all requirements in Requirement R5.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Planning Coordinator, Transmission Planner, Transmission Owner, Distribution Provider, Generator Owner, and applicable Generator Owner, ~~and Load-Serving Entity~~ shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for three years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Check

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------------|--------|--|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities, but failed to study one of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study two of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator studied the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of generation, transmission, or electricity end-user Facilities but failed to study three of the Parts (R1, 1.1-1.4). | The Transmission Planner or Planning Coordinator failed to study the reliability impact of: interconnecting new generation, transmission, or electricity end-user Facilities, and (ii) materially modifying existing interconnections of, generation, transmission, or electricity end-user Facilities. |
| R2 | Long-term Planning | Medium | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, coordinated and cooperated on studies | The Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, failed to coordinate and cooperate on |

| | | | | | | |
|-----------|--------------------|--------|---|---|---|---|
| | | | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | studies with its Transmission Planner or Planning Coordinator. |
| R3 | Long-term Planning | Medium | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4). | The Transmission Owner, or Distribution Provider, or Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator. |

| | | | | | | |
|------------------|---------------------------|---------------|--|--|--|--|
| <p>R4</p> | <p>Long-term Planning</p> | <p>Medium</p> | <p>The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested new or materially modified interconnections to its Facilities.</p> |
| <p>R5</p> | <p>Long-term Planning</p> | <p>Medium</p> | <p>The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The applicable Generator Owner coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The applicable Generator Owner failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator regarding requested interconnections to its Facilities.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None

Application Guidelines

Guidelines and Technical Basis

Entities should have documentation to support the technical rationale for determining whether an existing interconnection was “materially modified.” Recognizing that what constitutes a “material modification” will vary from entity to entity, the intent is for this determination to be based on engineering judgment.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|--------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | January 13, 2006 | Removed duplication of “Regional Reliability Organizations(s). | Errata |
| 1 | August 5, 2010 | Modified to address Order No. 693 Directives contained in paragraph 693. Adopted by the NERC Board of Trustees. | Revised |
| 1 | February 7, 2013 | R2 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 1 | November 21, 2013 | R2 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2 | | Revisions to implement the recommendations of the FAC Five-Year Review Team. | Revision under Project 2010-02 |
| 2 | August 14, 2014 | Adopted by the Board of Trustees. | |
| 2 | November 6, 2014 | FERC letter order issued approving FAC-002-2. | |
| <u>3</u> | | <u>Adopted by the Board of Trustees.</u> | |

A. Introduction

1. **Title:** Reliability Coordinator Data Specification and Collection
2. **Number:** IRO-010-3
3. **Purpose:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
4. **Applicability**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
 - 4.3. Generator Owner.
 - 4.4. Generator Operator.
 - 4.5. Transmission Operator.
 - 4.6. Transmission Owner.
 - 4.7. Distribution Provider.
5. **Effective Date:** See Implementation Plan.

B. Requirements

- R1. The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*
 - 1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data, as deemed necessary by the Reliability Coordinator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. The Reliability Coordinator shall make available its dated, current, in force documented specification for data.
- R2. The Reliability Coordinator shall distribute its data specification to entities that have data required by the Reliability Coordinator's Operational Planning Analyses, Real-

time monitoring, and Real-time Assessments. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)

- M2.** The Reliability Coordinator shall make available evidence that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. This evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R3.** Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall satisfy the obligations of the documented specifications using: (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations*)
- 3.1** A mutually agreeable format
 - 3.2** A mutually agreeable process for resolving data conflicts
 - 3.3** A mutually agreeable security protocol
- M3.** The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Reliability Coordinator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall make available evidence that it satisfied the obligations of the documented specification using the specified criteria. Such evidence could include but is not limited to electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2 Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its dated, current, in force documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R1, Measure M1 as well as any documents in force since the last compliance audit.

The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2.

Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R3 and Measurement M3.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|----|---------------------|-----|---|---|---|---|
| | | | Lower | Moderate | High | Severe |
| R1 | Operations Planning | Low | The Reliability Coordinator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include any of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Reliability Coordinator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|---|---------------------|-----|---|--|---|--|
| | | | Lower | Moderate | High | Severe |
| | | | | | | monitoring, and Real-time Assessments. |
| <p>For the Requirement R2 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R2 | Operations Planning | Low | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, and Real-time monitoring, and Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to four or more entities, or more than 15% of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--|--------|--|--|--|--|
| | | | Lower | Moderate | High | Severe |
| | | | | Assessments. | monitoring, and Real-time Assessments. | Assessments. |
| R3 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow one of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow two of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow any of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|----------------|-------------------|--|---------------------------------|
| 1 | October 17, 2008 | Adopted by Board of Trustees | New |
| 1a | August 5, 2009 | Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees | Addition |
| 1a | March 17, 2011 | Order issued by FERC approving IRO-010-1a (approval effective 5/23/11) | |
| 1a | November 19, 2013 | Updated VRFs based on June 24, 2013 approval | |
| 2 | April 2014 | Revisions pursuant to Project 2014-03 | |
| 2 | November 13, 2014 | Adopted by NERC Board of Trustees | Revisions under Project 2014-03 |
| 2 | November 19, 2015 | FERC approved IRO-010-2. Docket No. RM15-16-000 | |
| 3 | | Adopted by NERC Board of Trustees | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT adoption, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for Applicability Changes:

Changes were made to applicability based on IRO FYRT recommendation to address the need for UVLS and UFLS information in the data specification.

The Interchange Authority was removed because activities in the Coordinate Interchange standards are performed by software systems and not a responsible entity. The software, not a functional entity, performs the task of accepting and disseminating interchange data between entities. The Balancing Authority is the responsible functional entity for these tasks.

The Planning Coordinator and Transmission Planner were removed from Draft 2 as those entities would not be involved in a data specification concept as outlined in this standard.

Rationale:

Proposed Requirement R1, Part 1.1:

Is in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Reliability Coordinator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2:

Is in response to NOPR paragraph 78 on relay data.

Proposed Requirement R3, Part 3.3:

Is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Corresponding changes have been made to proposed TOP-003-3.

A. Introduction

1. **Title:** Reliability Coordinator Data Specification and Collection
2. **Number:** IRO-010-3
3. **Purpose:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
4. **Applicability**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
 - 4.3. Generator Owner.
 - 4.4. Generator Operator.
 - 4.5. Transmission Operator.
 - 4.6. Transmission Owner.
 - 4.7. Distribution Provider.
5. **Proposed-Effective Date:** See Implementation Plan.

B. Requirements

- R1. The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*
 - 1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data, as deemed necessary by the Reliability Coordinator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. The Reliability Coordinator shall make available its dated, current, in force documented specification for data.
- R2. The Reliability Coordinator shall distribute its data specification to entities that have data required by the Reliability Coordinator's Operational Planning Analyses, Real-

time monitoring, and Real-time Assessments. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)

- M2.** The Reliability Coordinator shall make available evidence that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. This evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R3.** Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall satisfy the obligations of the documented specifications using: (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations*)
- 3.1** A mutually agreeable format
 - 3.2** A mutually agreeable process for resolving data conflicts
 - 3.3** A mutually agreeable security protocol
- M3.** The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Reliability Coordinator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall make available evidence that it satisfied the obligations of the documented specification using the specified criteria. Such evidence could include but is not limited to electronic or hard copies of data transmittals or attestations of receiving entities.

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1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2 Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its dated, current, in force documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R1, Measure M1 as well as any documents in force since the last compliance audit.

The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2.

Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R3 and Measurement M3.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|----|---------------------|-----|---|---|---|---|
| | | | Lower | Moderate | High | Severe |
| R1 | Operations Planning | Low | The Reliability Coordinator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include any of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Reliability Coordinator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|---|---------------------|-----|---|--|---|--|
| | | | Lower | Moderate | High | Severe |
| | | | | | | monitoring, and Real-time Assessments. |
| <p>For the Requirement R2 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R2 | Operations Planning | Low | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, and Real-time monitoring, and Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to four or more entities, or more than 15% of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--|--------|--|--|--|--|
| | | | Lower | Moderate | High | Severe |
| | | | | Assessments. | monitoring, and Real-time Assessments. | Assessments. |
| R3 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow one of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow two of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow any of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---------------------------------|
| 1 | October 17, 2008 | Adopted by Board of Trustees | New |
| 1a | August 5, 2009 | Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees | Addition |
| 1a | March 17, 2011 | Order issued by FERC approving IRO-010-1a (approval effective 5/23/11) | |
| 1a | November 19, 2013 | Updated VRFs based on June 24, 2013 approval | |
| 2 | April 2014 | Revisions pursuant to Project 2014-03 | |
| 2 | November 13, 2014 | Adopted by NERC Board of Trustees | Revisions under Project 2014-03 |
| 2 | November 19, 2015 | FERC approved IRO-010-2. Docket No. RM15-16-000 | |
| 3 | | Adopted by NERC Board of Trustees | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT adoption, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for Applicability Changes:

Changes were made to applicability based on IRO FYRT recommendation to address the need for UVLS and UFLS information in the data specification.

The Interchange Authority was removed because activities in the Coordinate Interchange standards are performed by software systems and not a responsible entity. The software, not a functional entity, performs the task of accepting and disseminating interchange data between entities. The Balancing Authority is the responsible functional entity for these tasks.

The Planning Coordinator and Transmission Planner were removed from Draft 2 as those entities would not be involved in a data specification concept as outlined in this standard.

Rationale:

Proposed Requirement R1, Part 1.1:

Is in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Reliability Coordinator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2:

Is in response to NOPR paragraph 78 on relay data.

Proposed Requirement R3, Part 3.3:

Is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Corresponding changes have been made to proposed TOP-003-3.

A. Introduction

1. **Title:** Reliability Coordinator Data Specification and Collection
2. **Number:** IRO-010-~~32~~
3. **Purpose:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
4. **Applicability**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
 - 4.3. Generator Owner.
 - 4.4. Generator Operator.
 - ~~4.5. Load Serving Entity.~~
 - ~~4.6.4.5.~~ _____ Transmission Operator.
 - ~~4.7.4.6.~~ _____ Transmission Owner.
 - ~~4.8.4.7.~~ _____ Distribution Provider.
5. **Proposed Effective Date:** See Implementation Plan.
- ~~6. Background~~

See ~~Project 2014-03 project page.~~

B. Requirements

- R1. The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*
 - 1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data, as deemed necessary by the Reliability Coordinator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.

- M1.** The Reliability Coordinator shall make available its dated, current, in force documented specification for data.
- R2.** The Reliability Coordinator shall distribute its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)
- M2.** The Reliability Coordinator shall make available evidence that it has distributed its data specification to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. This evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R3.** Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall satisfy the obligations of the documented specifications using: (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations*)
- 3.1** A mutually agreeable format
 - 3.2** A mutually agreeable process for resolving data conflicts
 - 3.3** A mutually agreeable security protocol
- M3.** The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Reliability Coordinator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R2 shall make available evidence that it satisfied the obligations of the documented specification using the specified criteria. Such evidence could include but is not limited to electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2 Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate

data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Load Serving Entity~~, Transmission Operator, ~~Transmission Owner~~, and Distribution Provider shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its dated, current, in force documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R1, Measure M1 as well as any documents in force since the last compliance audit.

The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its data specification to entities that have data required by the Reliability Coordinator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2.

Each Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, ~~Interchange Authority~~, ~~Load Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R3 and Measurement M3.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|----|---------------------|-----|---|---|---|---|
| | | | Lower | Moderate | High | Severe |
| R1 | Operations Planning | Low | The Reliability Coordinator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not include any of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Reliability Coordinator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|---|---------------------|-----|---|--|---|--|
| | | | Lower | Moderate | High | Severe |
| | | | | | | monitoring, and Real-time Assessments. |
| <p>For the Requirement R2 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R2 | Operations Planning | Low | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, and Real-time monitoring, and Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time | The Reliability Coordinator did not distribute its data specification as developed in Requirement R1 to four or more entities, or more than 15% of the entities, whichever is greater, that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time |

| R# | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--|--------|--|--|--|--|
| | | | Lower | Moderate | High | Severe |
| | | | | Assessments. | monitoring, and Real-time Assessments. | Assessments. |
| R3 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow one of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow two of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 satisfied the obligations of the documented specifications for data but failed to follow any of the criteria shown in Parts 3.1 – 3.3. | The responsible entity receiving a data specification in Requirement R2 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None

E. Interpretations

None _____

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|---------------------------------|
| 1 | October 17, 2008 | Adopted by Board of Trustees | New |
| 1a | August 5, 2009 | Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees | Addition |
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| <u>3</u> | | <u>Adopted by NERC Board of Trustees</u> | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT adoption, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

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The Planning Coordinator and Transmission Planner were removed from Draft 2 as those entities would not be involved in a data specification concept as outlined in this standard.

Rationale:

Proposed Requirement R1, Part 1.1:

Is in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Reliability Coordinator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2:

Is in response to NOPR paragraph 78 on relay data.

Proposed Requirement R3, Part 3.3:

IRO-010-3 — Reliability Coordinator Data Specification and Collection Standard IRO-010-2
— Guidelines and Technical Basis

Is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Corresponding changes have been made to proposed TOP-003-3.

A. Introduction

Title: Demand and Energy Data

Number: MOD-031-3

Purpose: To provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.

Applicability:

1.1. Functional Entities:

- 1.1.1 Planning Coordinator
- 1.1.2 Transmission Planner
- 1.1.3 Balancing Authority
- 1.1.4 Resource Planner
- 1.1.5 Distribution Provider

2. Effective Date: See Implementation Plan.

B. Requirements and Measures

- R1.** Each Planning Coordinator or Balancing Authority that identifies a need for the collection of Total Internal Demand, Net Energy for Load, and Demand Side Management data shall develop and issue a data request to the applicable entities in its area. The data request shall include: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data (“Applicable Entities”).
 - 1.2.** A timetable for providing the data. (A minimum of 30 calendar days must be allowed for responding to the request).
 - 1.3.** A request to provide any or all of the following actual data, as necessary:
 - 1.3.1.** Integrated hourly Demands in megawatts for the prior calendar year.
 - 1.3.2.** Monthly and annual integrated peak hour Demands in megawatts for the prior calendar year.
 - 1.3.2.1.** If the annual peak hour actual Demand varies due to weather-related conditions (e.g., temperature, humidity or wind speed), the Applicable Entity shall also provide the weather normalized annual peak hour actual Demand for the prior calendar year.

- 1.3.3.** Monthly and annual Net Energy for Load in gigawatt hours for the prior calendar year.
- 1.3.4.** Monthly and annual peak hour controllable and dispatchable Demand Side Management under the control or supervision of the System Operator in megawatts for the prior calendar year. Three values shall be reported for each hour: 1) the committed megawatts (the amount under control or supervision), 2) the dispatched megawatts (the amount, if any, activated for use by the System Operator), and 3) the realized megawatts (the amount of actual demand reduction).
- 1.4.** A request to provide any or all of the following forecast data, as necessary:
 - 1.4.1.** Monthly peak hour forecast Total Internal Demands in megawatts for the next two calendar years.
 - 1.4.2.** Monthly forecast Net Energy for Load in gigawatthours for the next two calendar years.
 - 1.4.3.** Peak hour forecast Total Internal Demands (summer and winter) in megawatts for ten calendar years into the future.
 - 1.4.4.** Annual forecast Net Energy for Load in gigawatthours for ten calendar years into the future.
 - 1.4.5.** Total and available peak hour forecast of controllable and dispatchable Demand Side Management (summer and winter), in megawatts, under the control or supervision of the System Operator for ten calendar years into the future.
- 1.5.** A request to provide any or all of the following summary explanations, as necessary,:
 - 1.5.1.** The assumptions and methods used in the development of aggregated Peak Demand and Net Energy for Load forecasts.
 - 1.5.2.** The Demand and energy effects of controllable and dispatchable Demand Side Management under the control or supervision of the System Operator.
 - 1.5.3.** How Demand Side Management is addressed in the forecasts of its Peak Demand and annual Net Energy for Load.
 - 1.5.4.** How the controllable and dispatchable Demand Side Management forecast compares to actual controllable and dispatchable Demand Side Management for the prior calendar year and, if applicable, how the assumptions and methods for future forecasts were adjusted.
 - 1.5.5.** How the peak Demand forecast compares to actual Demand for the prior calendar year with due regard to any relevant weather-related variations

(e.g., temperature, humidity, or wind speed) and, if applicable, how the assumptions and methods for future forecasts were adjusted.

- M1.** The Planning Coordinator or Balancing Authority shall have a dated data request, either in hardcopy or electronic format, in accordance with Requirement R1.
- R2.** Each Applicable Entity identified in a data request shall provide the data requested by its Planning Coordinator or Balancing Authority in accordance with the data request issued pursuant to Requirement R1. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** Each Applicable Entity shall have evidence, such as dated e-mails or dated transmittal letters that it provided the requested data in accordance with Requirement R2.
- R3.** The Planning Coordinator or the Balancing Authority shall provide the data listed under Requirement R1 Parts 1.3 through 1.5 for their area to the applicable Regional Entity within 75 calendar days of receiving a request for such data, unless otherwise agreed upon by the parties. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Planning Coordinator or Balancing Authority, shall have evidence, such as dated e-mails or dated transmittal letters that it provided the data requested by the applicable Regional Entity in accordance with Requirement R3.
- R4.** Any Applicable Entity shall, in response to a written request for the data included in parts 1.3-1.5 of Requirement R1 from a Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner with a demonstrated need for such data in order to conduct reliability assessments of the Bulk Electric System, provide or otherwise make available that data to the requesting entity. This requirement does not modify an entity's obligation pursuant to Requirement R2 to respond to data requests issued by its Planning Coordinator or Balancing Authority pursuant to Requirement R1. Unless otherwise agreed upon, the Applicable Entity: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- shall not be required to alter the format in which it maintains or uses the data;
 - shall provide the requested data within 45 calendar days of the written request, subject to part 4.1 of this requirement; unless providing the requested data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements
- 4.1.** If the Applicable Entity does not provide data requested because (1) the requesting entity did not demonstrate a reliability need for the data; or (2) providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements, the Applicable Entity shall, within 30 calendar days of the written request, provide a written response to the requesting entity specifying the data that is not being provided and on what basis.

- M4.** Each Applicable Entity identified in Requirement R4 shall have evidence such as dated e-mails or dated transmittal letters that it provided the data requested or provided a written response specifying the data that is not being provided and the basis for not providing the data in accordance with Requirement R4.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R4, and Measures M1 through M4, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | N/A | N/A | N/A | The Planning Coordinator or Balancing Authority developed and issued a data request but failed to include either the entity(s) necessary to provide the data or the timetable for providing the data. |
| R2 | Long-term Planning | Medium | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide all of the data requested in Requirement R1 part 1.5.1 through part 1.5.5</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.4.1 through part 1.4.5</p> |

| | | | | | | |
|----|--------------------|--------|--|--|---|---|
| | | | <p>did so after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 15 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>OR The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide the data requested in the timetable provided pursuant to Requirement R1 prior to 16 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> |
| R3 | Long-term Planning | Medium | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 75 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 80 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 85 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, failed to make available the data requested prior to 91 days</p> |

| | | | | | | |
|----|--------------------|--------|---|---|---|---|
| | | | from the date of request but prior to 81 days from the date of the request. | from the date of request but prior to 86 days from the date of the request. | from the date of request but prior to 91 days from the date of the request. | or more from the date of the request. |
| R4 | Long-term Planning | Medium | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 45 days from the date of request but prior to 51 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 30 days of the written request but prior to 36 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 50 days from the date of request but prior to 56 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 35 days of the written request but prior to 41 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 55 days from the date of request but prior to 61 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 40 days of the written request but prior to 46 days of the written request.</p> | <p>The Applicable Entity failed to provide or otherwise make available the data to the requesting entity within 60 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested failed to provide a written response specifying the data that is not being provided and on what basis within 45 days of the written request.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|---|-----------------|
| 1 | May 6, 2014 | Adopted by the NERC Board of Trustees | |
| 1 | February 19, 2015 | FERC order approving MOD-031-1 | |
| 2 | November 5, 2015 | Adopted by the NERC Board of Trustees | |
| 2 | February 18, 2016 | FERC order approving MOD-031-2. Docket No. RD16-1-000 | |
| 3 | | Adopted by the NERC Board of Trustees | |

Guidelines and Technical Basis

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

Rationale for R1: To ensure that when Planning Coordinators (PCs) or Balancing Authorities (BAs) request data (R1), they identify the entities that must provide the data (Applicable Entity in part 1.1), the data to be provided (parts 1.3 – 1.5) and the due dates (part 1.2) for the requested data.

For Requirement R1 part 1.3.2.1, if the Demand does not vary due to weather-related conditions (e.g., temperature, humidity or wind speed), or the weather assumed in the forecast was the same as the actual weather, the weather normalized actual Demand will be the same as the actual demand reported for Requirement R1 part 1.3.2. Otherwise the annual peak hour weather normalized actual Demand will be different from the actual demand reported for Requirement R1 part 1.3.2.

Balancing Authorities are included here to reflect a practice in the WECC Region where BAs are the entity that perform this requirement in lieu of the PC.

Rationale for R2:

This requirement will ensure that entities identified in Requirement R1, as responsible for providing data, provide the data in accordance with the details described in the data request developed in accordance with Requirement R1. In no event shall the Applicable Entity be required to provide data under this requirement that is outside the scope of parts 1.3 - 1.5 of Requirement R1.

Rationale for R3:

This requirement will ensure that the Planning Coordinator or when applicable, the Balancing Authority, provides the data requested by the Regional Entity.

Rationale for R4:

This requirement will ensure that the Applicable Entity will make the data requested by the Planning Coordinator or Balancing Authority in Requirement R1 available to other applicable entities (Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner) unless providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements. The sharing of documentation of the supporting methods and assumptions used to develop forecasts as well as information-sharing activities will improve the efficiency of planning practices and support the identification of needed system reinforcements.

The obligation to share data under Requirement R4 does not supersede or otherwise modify any of the Applicable Entity's existing confidentiality obligations. For instance, if an entity is prohibited from providing any of the requested data pursuant to confidentiality provisions of an Open Access Transmission Tariff or a contractual arrangement, Requirement R4 does not require the Applicable Entity to provide the data to a requesting entity. Rather, under Part 4.1, the Applicable Entity must simply provide written notification to the requesting entity that it will not be providing the data and the basis for not providing the data. If the Applicable Entity is subject to confidentiality obligations that allow the Applicable Entity to share the data only if certain conditions are met, the Applicable Entity shall ensure that those conditions are met within the 45-day time period provided in Requirement R4, communicate with the requesting entity regarding an extension of the 45-day time period so as to meet all those conditions, or provide justification under Part 4.1 as to why those conditions cannot be met under the circumstances.

A. Introduction

Title: Demand and Energy Data

Number: MOD-031-3

Purpose: To provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.

Applicability:

1.1. Functional Entities:

- 1.1.1 Planning Coordinator
- 1.1.2 Transmission Planner
- 1.1.3 Balancing Authority
- 1.1.4 Resource Planner
- 1.1.5 Distribution Provider

~~1.2.~~ **Effective Date:** See Implementation Plan.

~~To ensure that various forms of historical and forecast Demand and energy data and information is available to the parties that perform reliability studies and assessments, authority is needed to collect the applicable data.~~

~~The collection of Demand, Net Energy for Load and Demand Side Management data requires coordination and collaboration between Planning Coordinators, Transmission and Resource Planners, and Distribution Providers. Ensuring that planners and operators have access to complete and accurate load forecasts — as well as the supporting methods and assumptions used to develop these forecasts — enhances the reliability of the Bulk Electric System. Consistent documenting and information sharing activities will also improve efficient planning practices and support the identification of needed system reinforcements. Furthermore, collection of actual Demand and Demand Side Management performance during the prior year will allow for comparison to prior forecasts and further contribute to enhanced accuracy of load forecasting practices.~~

~~Data provided under this standard is generally considered confidential by Planning Coordinators and Balancing Authorities receiving the data. Furthermore, data reported to a Regional Entity is subject to the confidentiality provisions in Section 1500 of the North American Electric Reliability Corporation Rules of Procedure and is typically aggregated with data of other functional entities in a non-attributable manner. While this standard allows for the sharing of data necessary to perform certain reliability studies and assessments, any data received under this standard for which an applicable entity has made a claim of confidentiality should be maintained as confidential by the receiving entity.~~

B. Requirements and Measures

- R1.** Each Planning Coordinator or Balancing Authority that identifies a need for the collection of Total Internal Demand, Net Energy for Load, and Demand Side Management data shall develop and issue a data request to the applicable entities in its area. The data request shall include: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** A list of Transmission Planners, Balancing Authorities, and Distribution Providers that are required to provide the data (“Applicable Entities”).
 - 1.2.** A timetable for providing the data. (A minimum of 30 calendar days must be allowed for responding to the request).
 - 1.3.** A request to provide any or all of the following actual data, as necessary:
 - 1.3.1.** Integrated hourly Demands in megawatts for the prior calendar year.
 - 1.3.2.** Monthly and annual integrated peak hour Demands in megawatts for the prior calendar year.
 - 1.3.2.1.** If the annual peak hour actual Demand varies due to weather-related conditions (e.g., temperature, humidity or wind speed), the Applicable Entity shall also provide the weather normalized annual peak hour actual Demand for the prior calendar year.
 - 1.3.3.** Monthly and annual Net Energy for Load in gigawatthours for the prior calendar year.
 - 1.3.4.** Monthly and annual peak hour controllable and dispatchable Demand Side Management under the control or supervision of the System Operator in megawatts for the prior calendar year. Three values shall be reported for each hour: 1) the committed megawatts (the amount under control or supervision), 2) the dispatched megawatts (the amount, if any, activated for use by the System Operator), and 3) the realized megawatts (the amount of actual demand reduction).
 - 1.4.** A request to provide any or all of the following forecast data, as necessary:
 - 1.4.1.** Monthly peak hour forecast Total Internal Demands in megawatts for the next two calendar years.
 - 1.4.2.** Monthly forecast Net Energy for Load in gigawatthours for the next two calendar years.
 - 1.4.3.** Peak hour forecast Total Internal Demands (summer and winter) in megawatts for ten calendar years into the future.
 - 1.4.4.** Annual forecast Net Energy for Load in gigawatthours for ten calendar years into the future.

Transmission Planner or Resource Planner with a demonstrated need for such data in order to conduct reliability assessments of the Bulk Electric System, provide or otherwise make available that data to the requesting entity. This requirement does not modify an entity's obligation pursuant to Requirement R2 to respond to data requests issued by its Planning Coordinator or Balancing Authority pursuant to Requirement R1. Unless otherwise agreed upon, the Applicable Entity: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*

- shall not be required to alter the format in which it maintains or uses the data;
- shall provide the requested data within 45 calendar days of the written request, subject to part 4.1 of this requirement; unless providing the requested data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements

4.1. If the Applicable Entity does not provide data requested because (1) the requesting entity did not demonstrate a reliability need for the data; or (2) providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements, the Applicable Entity shall, within 30 calendar days of the written request, provide a written response to the requesting entity specifying the data that is not being provided and on what basis.

M4. Each Applicable Entity identified in Requirement R4 shall have evidence such as dated e-mails or dated transmittal letters that it provided the data requested or provided a written response specifying the data that is not being provided and the basis for not providing the data in accordance with Requirement R4.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R4, and Measures M1 through M4, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | N/A | N/A | N/A | The Planning Coordinator or Balancing Authority developed and issued a data request but failed to include either the entity(s) necessary to provide the data or the timetable for providing the data. |
| R2 | Long-term Planning | Medium | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide all of the data requested in Requirement R1 part 1.5.1 through part 1.5.5</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.4.1 through part 1.4.5</p> |

| | | | | | | |
|----|--------------------|--------|--|--|---|---|
| | | | <p>did so after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 15 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>OR The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide the data requested in the timetable provided pursuant to Requirement R1 prior to 16 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> |
| R3 | Long-term Planning | Medium | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 75 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 80 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 85 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, failed to make available the data requested prior to 91 days</p> |

| | | | | | | |
|----|--------------------|--------|---|---|---|---|
| | | | from the date of request but prior to 81 days from the date of the request. | from the date of request but prior to 86 days from the date of the request. | from the date of request but prior to 91 days from the date of the request. | or more from the date of the request. |
| R4 | Long-term Planning | Medium | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 45 days from the date of request but prior to 51 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 30 days of the written request but prior to 36 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 50 days from the date of request but prior to 56 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 35 days of the written request but prior to 41 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 55 days from the date of request but prior to 61 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 40 days of the written request but prior to 46 days of the written request.</p> | <p>The Applicable Entity failed to provide or otherwise make available the data to the requesting entity within 60 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested failed to provide a written response specifying the data that is not being provided and on what basis within 45 days of the written request.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|---|-----------------|
| 1 | May 6, 2014 | Adopted by the NERC Board of Trustees | |
| 1 | February 19, 2015 | FERC order approving MOD-031-1 | |
| 2 | November 5, 2015 | Adopted by the NERC Board of Trustees | |
| 2 | February 18, 2016 | FERC order approving MOD-031-2. Docket No. RD16-1-000 | |
| 3 | | Adopted by the NERC Board of Trustees | |

Guidelines and Technical Basis

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

Rationale for R1: To ensure that when Planning Coordinators (PCs) or Balancing Authorities (BAs) request data (R1), they identify the entities that must provide the data (Applicable Entity in part 1.1), the data to be provided (parts 1.3 – 1.5) and the due dates (part 1.2) for the requested data.

For Requirement R1 part 1.3.2.1, if the Demand does not vary due to weather-related conditions (e.g., temperature, humidity or wind speed), or the weather assumed in the forecast was the same as the actual weather, the weather normalized actual Demand will be the same as the actual demand reported for Requirement R1 part 1.3.2. Otherwise the annual peak hour weather normalized actual Demand will be different from the actual demand reported for Requirement R1 part 1.3.2.

Balancing Authorities are included here to reflect a practice in the WECC Region where BAs are the entity that perform this requirement in lieu of the PC.

Rationale for R2:

This requirement will ensure that entities identified in Requirement R1, as responsible for providing data, provide the data in accordance with the details described in the data request developed in accordance with Requirement R1. In no event shall the Applicable Entity be required to provide data under this requirement that is outside the scope of parts 1.3 - 1.5 of Requirement R1.

Rationale for R3:

This requirement will ensure that the Planning Coordinator or when applicable, the Balancing Authority, provides the data requested by the Regional Entity.

Rationale for R4:

This requirement will ensure that the Applicable Entity will make the data requested by the Planning Coordinator or Balancing Authority in Requirement R1 available to other applicable entities (Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner) unless providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements. The sharing of documentation of the supporting methods and assumptions used to develop forecasts as well as information-sharing activities will improve the efficiency of planning practices and support the identification of needed system reinforcements.

The obligation to share data under Requirement R4 does not supersede or otherwise modify any of the Applicable Entity's existing confidentiality obligations. For instance, if an entity is prohibited from providing any of the requested data pursuant to confidentiality provisions of an Open Access Transmission Tariff or a contractual arrangement, Requirement R4 does not require the Applicable Entity to provide the data to a requesting entity. Rather, under Part 4.1, the Applicable Entity must simply provide written notification to the requesting entity that it will not be providing the data and the basis for not providing the data. If the Applicable Entity is subject to confidentiality obligations that allow the Applicable Entity to share the data only if certain conditions are met, the Applicable Entity shall ensure that those conditions are met within the 45-day time period provided in Requirement R4, communicate with the requesting entity regarding an extension of the 45-day time period so as to meet all those conditions, or provide justification under Part 4.1 as to why those conditions cannot be met under the circumstances.

A. Introduction

1. **Title:** Demand and Energy Data
2. **Number:** MOD-031-~~2~~3
3. **Purpose:** To provide authority for applicable entities to collect Demand, energy and related data to support reliability studies and assessments and to enumerate the responsibilities and obligations of requestors and respondents of that data.
4. **Applicability:**

4.1. Functional Entities:

~~4.1.1 Planning Authority and Planning Coordinator (hereafter collectively referred to as the “Planning Coordinator”)~~

~~4.1.24.1.1 This proposed standard combines “Planning Authority” with “Planning Coordinator” in the list of applicable functional entities. The NERC Functional Model lists “Planning Coordinator” while the registration criteria list “Planning Authority,” and they are not yet synchronized. Until that occurs, the proposed standard applies to both “Planning Authority” and “Planning Coordinator.”~~

~~4.1.34.1.2~~ Transmission Planner

~~4.1.44.1.3~~ Balancing Authority

~~4.1.54.1.4~~ Resource Planner

~~4.1.6 Load Serving Entity~~

~~4.1.74.1.5~~ Distribution Provider

5. **Effective Date:** See ~~the MOD-031-2~~ Implementation Plan.

~~6. Background:~~

~~To ensure that various forms of historical and forecast Demand and energy data and information is available to the parties that perform reliability studies and assessments, authority is needed to collect the applicable data.~~

~~The collection of Demand, Net Energy for Load and Demand Side Management data requires coordination and collaboration between Planning Authorities (Planning Coordinators), Transmission and Resource Planners, Load Serving Entities and Distribution Providers. Ensuring that planners and operators have access to complete and accurate load forecasts — as well as the supporting methods and assumptions used to develop these forecasts — enhances the reliability of the Bulk Electric System. Consistent documenting and information sharing activities will also improve efficient planning practices and support the identification of needed system reinforcements. Furthermore, collection of actual Demand and Demand Side Management performance during the prior year will allow for comparison to prior forecasts and further contribute to enhanced accuracy of load forecasting practices.~~

~~Data provided under this standard is generally considered confidential by Planning Coordinators and Balancing Authorities receiving the data. Furthermore, data reported to a Regional Entity is subject to the confidentiality provisions in Section 1500 of the North American Electric Reliability Corporation Rules of Procedure and is typically aggregated with data of other functional entities in a non-attributable manner. While this standard allows for the sharing of data necessary to perform certain reliability studies and assessments, any data received under this standard for which an applicable entity has made a claim of confidentiality should be maintained as confidential by the receiving entity.~~

B. Requirements and Measures

- R1.** Each Planning Coordinator or Balancing Authority that identifies a need for the collection of Total Internal Demand, Net Energy for Load, and Demand Side Management data shall develop and issue a data request to the applicable entities in its area. The data request shall include: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** A list of Transmission Planners, Balancing Authorities, ~~Load Serving Entities~~, and Distribution Providers that are required to provide the data (“Applicable Entities”).
 - 1.2.** A timetable for providing the data. (A minimum of 30 calendar days must be allowed for responding to the request).
 - 1.3.** A request to provide any or all of the following actual data, as necessary:
 - 1.3.1.** Integrated hourly Demands in megawatts for the prior calendar year.
 - 1.3.2.** Monthly and annual integrated peak hour Demands in megawatts for the prior calendar year.
 - 1.3.2.1.** If the annual peak hour actual Demand varies due to weather-related conditions (e.g., temperature, humidity or wind speed), the Applicable Entity shall also provide the weather normalized annual peak hour actual Demand for the prior calendar year.
 - 1.3.3.** Monthly and annual Net Energy for Load in gigawatthours for the prior calendar year.
 - 1.3.4.** Monthly and annual peak hour controllable and dispatchable Demand Side Management under the control or supervision of the System Operator in megawatts for the prior calendar year. Three values shall be reported for each hour: 1) the committed megawatts (the amount under control or supervision), 2) the dispatched megawatts (the amount, if any, activated for use by the System Operator), and 3) the realized megawatts (the amount of actual demand reduction).

- 1.4. A request to provide any or all of the following forecast data, as necessary:
 - 1.4.1. Monthly peak hour forecast Total Internal Demands in megawatts for the next two calendar years.
 - 1.4.2. Monthly forecast Net Energy for Load in gigawatthours for the next two calendar years.
 - 1.4.3. Peak hour forecast Total Internal Demands (summer and winter) in megawatts for ten calendar years into the future.
 - 1.4.4. Annual forecast Net Energy for Load in gigawatthours for ten calendar years into the future.
 - 1.4.5. Total and available peak hour forecast of controllable and dispatchable Demand Side Management (summer and winter), in megawatts, under the control or supervision of the System Operator for ten calendar years into the future.
- 1.5. A request to provide any or all of the following summary explanations, as necessary:
 - 1.5.1. The assumptions and methods used in the development of aggregated Peak Demand and Net Energy for Load forecasts.
 - 1.5.2. The Demand and energy effects of controllable and dispatchable Demand Side Management under the control or supervision of the System Operator.
 - 1.5.3. How Demand Side Management is addressed in the forecasts of its Peak Demand and annual Net Energy for Load.
 - 1.5.4. How the controllable and dispatchable Demand Side Management forecast compares to actual controllable and dispatchable Demand Side Management for the prior calendar year and, if applicable, how the assumptions and methods for future forecasts were adjusted.
 - 1.5.5. How the peak Demand forecast compares to actual Demand for the prior calendar year with due regard to any relevant weather-related variations (e.g., temperature, humidity, or wind speed) and, if applicable, how the assumptions and methods for future forecasts were adjusted.
- M1. The Planning Coordinator or Balancing Authority shall have a dated data request, either in hardcopy or electronic format, in accordance with Requirement R1.
- R2. Each Applicable Entity identified in a data request shall provide the data requested by its Planning Coordinator or Balancing Authority in accordance with the data request issued pursuant to Requirement R1. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2. Each Applicable Entity shall have evidence, such as dated e-mails or dated transmittal letters that it provided the requested data in accordance with Requirement R2.

- R3.** The Planning Coordinator or the Balancing Authority shall provide the data listed under Requirement R1 Parts 1.3 through 1.5 for their area to the applicable Regional Entity within 75 calendar days of receiving a request for such data, unless otherwise agreed upon by the parties. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Planning Coordinator or Balancing Authority, shall have evidence, such as dated e-mails or dated transmittal letters that it provided the data requested by the applicable Regional Entity in accordance with Requirement R3.
- R4.** Any Applicable Entity shall, in response to a written request for the data included in parts 1.3-1.5 of Requirement R1 from a Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner with a demonstrated need for such data in order to conduct reliability assessments of the Bulk Electric System, provide or otherwise make available that data to the requesting entity. This requirement does not modify an entity's obligation pursuant to Requirement R2 to respond to data requests issued by its Planning Coordinator or Balancing Authority pursuant to Requirement R1. Unless otherwise agreed upon, the Applicable Entity: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- shall not be required to alter the format in which it maintains or uses the data;
 - shall provide the requested data within 45 calendar days of the written request, subject to part 4.1 of this requirement; unless providing the requested data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements
- 4.1.** If the Applicable Entity does not provide data requested because (1) the requesting entity did not demonstrate a reliability need for the data; or (2) providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements, the Applicable Entity shall, within 30 calendar days of the written request, provide a written response to the requesting entity specifying the data that is not being provided and on what basis.
- M4.** Each Applicable Entity identified in Requirement R4 shall have evidence such as dated e-mails or dated transmittal letters that it provided the data requested or provided a written response specifying the data that is not being provided and the basis for not providing the data in accordance with Requirement R4.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R4, and Measures M1 through M4, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | N/A | N/A | N/A | The Planning Coordinator or Balancing Authority developed and issued a data request but failed to include either the entity(s) necessary to provide the data or the timetable for providing the data. |
| R2 | Long-term Planning | Medium | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide all of the data requested in Requirement R1 part 1.5.1 through part 1.5.5</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide one of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide two of the requested items in Requirement R1 part</p> | <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.3.1 through part 1.3.4</p> <p>OR</p> <p>The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide three or more of the requested items in Requirement R1 part 1.4.1 through part 1.4.5</p> |

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| | | | <p>did so after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 6 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>1.4.1 through part 1.4.5 OR The Applicable Entity, as defined in the data request developed in Requirement R1, provided the data requested in Requirement R1, but did so 11 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2 but prior to 15 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> | <p>OR The Applicable Entity, as defined in the data request developed in Requirement R1, failed to provide the data requested in the timetable provided pursuant to Requirement R1 prior to 16 days after the date indicated in the timetable provided pursuant to Requirement R1 part 1.2.</p> |
| R3 | Long-term Planning | Medium | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 75 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 80 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, made available the data requested, but did so after 85 days</p> | <p>The Planning Coordinator or Balancing Authority, in response to a request by the Regional Entity, failed to make available the data requested prior to 91 days</p> |

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|----|--------------------|--------|---|---|---|---|
| | | | from the date of request but prior to 81 days from the date of the request. | from the date of request but prior to 86 days from the date of the request. | from the date of request but prior to 91 days from the date of the request. | or more from the date of the request. |
| R4 | Long-term Planning | Medium | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 45 days from the date of request but prior to 51 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 30 days of the written request but prior to 36 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 50 days from the date of request but prior to 56 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 35 days of the written request but prior to 41 days of the written request.</p> | <p>The Applicable Entity provided or otherwise made available the data to the requesting entity but did so after 55 days from the date of request but prior to 61 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested provided a written response specifying the data that is not being provided and on what basis but did so after 40 days of the written request but prior to 46 days of the written request.</p> | <p>The Applicable Entity failed to provide or otherwise make available the data to the requesting entity within 60 days from the date of the request</p> <p>OR</p> <p>The Applicable Entity that is not providing the data requested failed to provide a written response specifying the data that is not being provided and on what basis within 45 days of the written request.</p> |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|---|-----------------|
| 1 | May 6, 2014 | Adopted by the NERC Board of Trustees | |
| 1 | February 19, 2015 | FERC order approving MOD-031-1 | |
| 2 | November 5, 2015 | Adopted by the NERC Board of Trustees | |
| 2 | February 18, 2016 | FERC order approving MOD-031-2. Docket No. RD16-1-000 | |
| <u>3</u> | | <u>Adopted by the NERC Board of Trustees</u> | |

Guidelines and Technical Basis

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

Rationale for R1: To ensure that when Planning Coordinators (PCs) or Balancing Authorities (BAs) request data (R1), they identify the entities that must provide the data (Applicable Entity in part 1.1), the data to be provided (parts 1.3 – 1.5) and the due dates (part 1.2) for the requested data.

For Requirement R1 part 1.3.2.1, if the Demand does not vary due to weather-related conditions (e.g., temperature, humidity or wind speed), or the weather assumed in the forecast was the same as the actual weather, the weather normalized actual Demand will be the same as the actual demand reported for Requirement R1 part 1.3.2. Otherwise the annual peak hour weather normalized actual Demand will be different from the actual demand reported for Requirement R1 part 1.3.2.

Balancing Authorities are included here to reflect a practice in the WECC Region where BAs are the entity that perform this requirement in lieu of the PC.

Rationale for R2:

This requirement will ensure that entities identified in Requirement R1, as responsible for providing data, provide the data in accordance with the details described in the data request developed in accordance with Requirement R1. In no event shall the Applicable Entity be required to provide data under this requirement that is outside the scope of parts 1.3 - 1.5 of Requirement R1.

Rationale for R3:

This requirement will ensure that the Planning Coordinator or when applicable, the Balancing Authority, provides the data requested by the Regional Entity.

Rationale for R4:

This requirement will ensure that the Applicable Entity will make the data requested by the Planning Coordinator or Balancing Authority in Requirement R1 available to other applicable entities (Planning Coordinator, Balancing Authority, Transmission Planner or Resource Planner) unless providing the data would conflict with the Applicable Entity's confidentiality, regulatory, or security requirements. The sharing of documentation of the supporting methods and assumptions used to develop forecasts as well as information-sharing activities will improve the efficiency of planning practices and support the identification of needed system reinforcements.

The obligation to share data under Requirement R4 does not supersede or otherwise modify any of the Applicable Entity's existing confidentiality obligations. For instance, if an entity is prohibited from providing any of the requested data pursuant to confidentiality provisions of an Open Access Transmission Tariff or a contractual arrangement, Requirement R4 does not require the Applicable Entity to provide the data to a requesting entity. Rather, under Part 4.1, the Applicable Entity must simply provide written notification to the requesting entity that it will not be providing the data and the basis for not providing the data. If the Applicable Entity is subject to confidentiality obligations that allow the Applicable Entity to share the data only if certain conditions are met, the Applicable Entity shall ensure that those conditions are met within the 45-day time period provided in Requirement R4, communicate with the requesting entity regarding an extension of the 45-day time period so as to meet all those conditions, or provide justification under Part 4.1 as to why those conditions cannot be met under the circumstances.

A. Introduction

1. **Title:** Steady-State and Dynamic System Model Validation
2. **Number:** MOD-033-2
3. **Purpose:** To establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Reliability Coordinator
 - 4.1.3 Transmission Operator
5. **Effective Date:** See Implementation Plan.

B. Requirements and Measures

- R1.** Each Planning Coordinator shall implement a documented data validation process that includes the following attributes: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
 - 1.2.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
 - 1.3.** Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and
 - 1.4.** Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.
- M1.** Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.
- R2.** Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation. *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*
- M2.** Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

“Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The applicable entity shall keep data or evidence to show compliance with Requirements R1 through R2, and Measures M1 through M2, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an applicable entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Refer to Section 3.0 of Appendix 4C of the NERC Rules of Procedure for a list of compliance monitoring and assessment processes.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | <p>The Planning Coordinator documented and implemented a process to validate data but did not address one of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation within 28 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address two of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address three of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator did not have a validation process at all or did not document or implement any of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not validate its portion of the system in the power flow model as required by part 1.1 within 36 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.2 within 36 calendar</p> |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|---------------------------|--------------|---|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation within 28 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months. | months (or the next dynamic local event in cases where there is more than 24 months between events). |
| R2 | Long-term Planning | Lower | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in less than or equal to 45 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 45 calendar days but less than or equal to 60 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 60 calendar days but less than or equal to 75 calendar days. | Coordinator within 75 calendar days; OR The Reliability Coordinator or Transmission Operator provided a written response that it does not have the requested data, but actually had the data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Guidelines and Technical Basis

Requirement R1:

The requirement focuses on the results-based outcome of developing a process for and performing a validation, but does not prescribe a specific method or procedure for the validation outside of the attributes specified in the requirement. For further information on suggested validation procedures, see “Procedures for Validation of Powerflow and Dynamics Cases” produced by the NERC Model Working Group.

The specific process is left to the judgment of the Planning Coordinator, but the Planning Coordinator is required to develop and include in its process guidelines for evaluating discrepancies between actual system behavior or response and expected system performance for determining whether the discrepancies are unacceptable.

For the validation in part 1.1, the state estimator case or other Real-time data should be taken as close to system peak as possible. However, other snapshots of the system could be used if deemed to be more appropriate by the Planning Coordinator. While the requirement specifies “once every 24 calendar months,” entities are encouraged to perform the comparison on a more frequent basis.

In performing the comparison required in part 1.1, the Planning Coordinator may consider, among other criteria:

1. System load;
2. Transmission topology and parameters;
3. Voltage at major buses; and
4. Flows on major transmission elements.

The validation in part 1.1 would include consideration of the load distribution and load power factors (as applicable) used in the power flow models. The validation may be made using metered load data if state estimator cases are not available. The comparison of system load distribution and load power factors shall be made on an aggregate company or power flow zone level at a minimum but may also be made on a bus by bus, load pocket (e.g., within a Balancing Authority), or smaller area basis as deemed appropriate by the Planning Coordinator.

The scope of dynamics model validation is intended to be limited, for purposes of part 1.2, to the Planning Coordinator’s planning area, and the intended emphasis under the requirement is on local events or local phenomena, not the whole Interconnection.

The validation required in part 1.2 may include simulations that are to be compared with actual system data and may include comparisons of:

- Voltage oscillations at major buses
- System frequency (for events with frequency excursions)
- Real and reactive power oscillations on generating units and major inter-area ties

Determining when a dynamic local event might occur may be unpredictable, and because of the analytic complexities involved in simulation, the time parameters in part 1.2 specify that the comparison period of “at least once every 24 calendar months” is intended to both provide for at least 24 months between dynamic local events used in the comparisons and that comparisons must be completed within 24 months of the date of the dynamic local event used. This clarification ensures that PCs will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison. With the 30 day timeframe in Requirement R2 for TOPs or RCs to provide actual system behavior data (if necessary in the comparison), it would potentially be impossible to complete the comparison within the 24 month timeframe.

In contrast, the requirement language clarifies that the time frame between dynamic local events used in the comparisons should be within 24 months of each other (or, as specified at the end of part 1.2, in the event more than 24 months passes before the next dynamic local event, the comparison should use the next dynamic local event that occurs). Each comparison must be completed within 24 months of the dynamic local event used. In this manner, the potential problem with a “month 23” dynamic local event described above is resolved. For example, if a PC uses for comparison a dynamic local event occurring on day 1 of month 1, the PC has 24 calendar months from that dynamic local event’s occurrence to complete the comparison. If the next dynamic event the PC chooses for comparison occurs in month 23, the PC has 24 months from that dynamic local event’s occurrence to complete the comparison.

Part 1.3 requires the PC to include guidelines in its documented validation process for determining when discrepancies in the comparison of simulation results with actual system results are unacceptable. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both. For the power flow comparison, as an example, this could include a guideline the Planning Coordinator will use that flows on 500 kV lines should be within 10% or 100 MW, whichever is larger. It could be different percentages or MW amounts for different voltage levels. Or, as another example, the guideline for voltage comparisons could be that it must be within 1%. But the guidelines the PC includes within its documented validation process should be meaningful for the Planning Coordinator’s system. Guidelines for the dynamic event comparison may be less precise. Regardless, the comparison should indicate that the conclusions drawn from the two results should be consistent. For example, the guideline could state that the simulation result will be plotted on the same graph as the actual system response. Then the two plots could be given a visual inspection to see if they look similar or not. Or a guideline could be defined such that the rise time of the transient response in the simulation should be within 20% of the rise time of the actual system response. As for the power flow guidelines, the dynamic comparison criteria should be meaningful for the Planning Coordinator’s system.

The guidelines the PC includes in its documented validation process to resolve differences in Part 1.4 could include direct coordination with the data owner, and, if necessary, through the provisions of MOD-032-1, Requirement R3 (i.e., the validation performed under this requirement could identify technical concerns with the data). In other words, while this standard is focused on validation, results of the validation may identify data provided under the

modeling data standard that needs to be corrected. If a model with estimated data or a generic model is used for a generator, and the model response does not match the actual response, then the estimated data should be corrected or a more detailed model should be requested from the data provider.

While the validation is focused on the Planning Coordinator's planning area, the model for the validation should be one that contains a wider area of the Interconnection than the Planning Coordinator's area. If the simulations can be made to match the actual system responses by reasonable changes to the data in the Planning Coordinator's area, then the Planning Coordinator should make those changes in coordination with the data provider. However, for some disturbances, the data in the Planning Coordinator's area may not be what is causing the simulations to not match actual responses. These situations should be reported to the Electric Reliability Organization (ERO). The guidelines the Planning Coordinator includes under Part 1.4 could cover these situations.

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

In FERC Order No. 693, paragraph 1210, the Commission directed inclusion of "a requirement that the models be validated against actual system responses." Furthermore, the Commission directs in paragraph 1211, "that actual system events be simulated and if the model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy." Paragraph 1220 similarly directs validation against actual system responses relative to dynamics system models. In FERC Order 890, paragraph 290, the Commission states that "the models should be updated and benchmarked to actual events." Requirement R1 addresses these directives.

Requirement R1 requires the Planning Coordinator to implement a documented data validation process to validate data in the Planning Coordinator's portion of the existing system in the steady-state and dynamic models to compare performance against expected behavior or response, which is consistent with the Commission directives. The validation of the full Interconnection-wide cases is left up to the Electric Reliability Organization (ERO) or its designees, and is not addressed by this standard. The following items were chosen for the validation requirement:

- A. Comparison of performance of the existing system in a planning power flow model to actual system behavior; and
- B. Comparison of the performance of the existing system in a planning dynamics model to actual system response.

Implementation of these validations will result in more accurate power flow and dynamic models. This, in turn, should result in better correlation between system flows and voltages

seen in power flow studies and the actual values seen by system operators during outage conditions. Similar improvements should be expected for dynamics studies, such that the results will more closely match the actual responses of the power system to disturbances.

Validation of model data is a good utility practice, but it does not easily lend itself to Reliability Standards requirement language. Furthermore, it is challenging to determine specifications for thresholds of disturbances that should be validated and how they are determined. Therefore, this requirement focuses on the Planning Coordinator performing validation pursuant to its process, which must include the attributes listed in parts 1.1 through 1.4, without specifying the details of “how” it must validate, which is necessarily dependent upon facts and circumstances. Other validations are best left to guidance rather than standard requirements.

Rationale for R2:

The Planning Coordinator will need actual system behavior data in order to perform the validations required in R1. The Reliability Coordinator or Transmission Operator may have this data. Requirement R2 requires the Reliability Coordinator and Transmission Operator to supply actual system data, if it has the data, to any requesting Planning Coordinator for purposes of model validation under Requirement R1.

This could also include information the Reliability Coordinator or Transmission Operator has at a field site. For example, if a PMU or DFR is at a generator site and it is recording the disturbance, the Reliability Coordinator or Transmission Operator would typically have that data.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|---|
| 1 | February 6, 2014 | Adopted by the NERC Board of Trustees. | Developed as a new standard for system validation to address outstanding directives from FERC Order No. 693 and recommendations from several other sources. |
| 1 | May 1, 2014 | FERC Order issued approving MOD-033-1. | |
| 2 | | Adopted by the NERC Board of Trustees. | |

A. Introduction

1. **Title: Steady-State and Dynamic System Model Validation**
2. **Number: MOD-033-2**
3. **Purpose:** To establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Planning Coordinator
 - 4.1.2 Reliability Coordinator
 - 4.1.3 Transmission Operator
5. **Effective Date:** See Implementation Plan.

B. Requirements and Measures

- R1.** Each Planning Coordinator shall implement a documented data validation process that includes the following attributes: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 1.1.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
 - 1.2.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
 - 1.3.** Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and
 - 1.4.** Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.
- M1.** Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.
- R2.** Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation. *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*
- M2.** Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

“Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The applicable entity shall keep data or evidence to show compliance with Requirements R1 through R2, and Measures M1 through M2, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an applicable entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Refer to Section 3.0 of Appendix 4C of the NERC Rules of Procedure for a list of compliance monitoring and assessment processes.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------------|--------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | <p>The Planning Coordinator documented and implemented a process to validate data but did not address one of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation within 28 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address two of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address three of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator did not have a validation process at all or did not document or implement any of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not validate its portion of the system in the power flow model as required by part 1.1 within 36 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.2 within 36 calendar</p> |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|---------------------------|--------------|---|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation within 28 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months. | months (or the next dynamic local event in cases where there is more than 24 months between events). |
| R2 | Long-term Planning | Lower | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in less than or equal to 45 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 45 calendar days but less than or equal to 60 calendar days. | Coordinator within 30 calendar days of the written request, but did provide the data (or written response that it does not have the requested data) in greater than 60 calendar days but less than or equal to 75 calendar days. | Coordinator within 75 calendar days; OR The Reliability Coordinator or Transmission Operator provided a written response that it does not have the requested data, but actually had the data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Guidelines and Technical Basis

Requirement R1:

The requirement focuses on the results-based outcome of developing a process for and performing a validation, but does not prescribe a specific method or procedure for the validation outside of the attributes specified in the requirement. For further information on suggested validation procedures, see “Procedures for Validation of Powerflow and Dynamics Cases” produced by the NERC Model Working Group.

The specific process is left to the judgment of the Planning Coordinator, but the Planning Coordinator is required to develop and include in its process guidelines for evaluating discrepancies between actual system behavior or response and expected system performance for determining whether the discrepancies are unacceptable.

For the validation in part 1.1, the state estimator case or other Real-time data should be taken as close to system peak as possible. However, other snapshots of the system could be used if deemed to be more appropriate by the Planning Coordinator. While the requirement specifies “once every 24 calendar months,” entities are encouraged to perform the comparison on a more frequent basis.

In performing the comparison required in part 1.1, the Planning Coordinator may consider, among other criteria:

1. System load;
2. Transmission topology and parameters;
3. Voltage at major buses; and
4. Flows on major transmission elements.

The validation in part 1.1 would include consideration of the load distribution and load power factors (as applicable) used in the power flow models. The validation may be made using metered load data if state estimator cases are not available. The comparison of system load distribution and load power factors shall be made on an aggregate company or power flow zone level at a minimum but may also be made on a bus by bus, load pocket (e.g., within a Balancing Authority), or smaller area basis as deemed appropriate by the Planning Coordinator.

The scope of dynamics model validation is intended to be limited, for purposes of part 1.2, to the Planning Coordinator’s planning area, and the intended emphasis under the requirement is on local events or local phenomena, not the whole Interconnection.

The validation required in part 1.2 may include simulations that are to be compared with actual system data and may include comparisons of:

- Voltage oscillations at major buses
- System frequency (for events with frequency excursions)
- Real and reactive power oscillations on generating units and major inter-area ties

Determining when a dynamic local event might occur may be unpredictable, and because of the analytic complexities involved in simulation, the time parameters in part 1.2 specify that the comparison period of “at least once every 24 calendar months” is intended to both provide for at least 24 months between dynamic local events used in the comparisons and that comparisons must be completed within 24 months of the date of the dynamic local event used. This clarification ensures that PCs will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison. With the 30 day timeframe in Requirement R2 for TOPs or RCs to provide actual system behavior data (if necessary in the comparison), it would potentially be impossible to complete the comparison within the 24 month timeframe.

In contrast, the requirement language clarifies that the time frame between dynamic local events used in the comparisons should be within 24 months of each other (or, as specified at the end of part 1.2, in the event more than 24 months passes before the next dynamic local event, the comparison should use the next dynamic local event that occurs). Each comparison must be completed within 24 months of the dynamic local event used. In this manner, the potential problem with a “month 23” dynamic local event described above is resolved. For example, if a PC uses for comparison a dynamic local event occurring on day 1 of month 1, the PC has 24 calendar months from that dynamic local event’s occurrence to complete the comparison. If the next dynamic event the PC chooses for comparison occurs in month 23, the PC has 24 months from that dynamic local event’s occurrence to complete the comparison.

Part 1.3 requires the PC to include guidelines in its documented validation process for determining when discrepancies in the comparison of simulation results with actual system results are unacceptable. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both. For the power flow comparison, as an example, this could include a guideline the Planning Coordinator will use that flows on 500 kV lines should be within 10% or 100 MW, whichever is larger. It could be different percentages or MW amounts for different voltage levels. Or, as another example, the guideline for voltage comparisons could be that it must be within 1%. But the guidelines the PC includes within its documented validation process should be meaningful for the Planning Coordinator’s system. Guidelines for the dynamic event comparison may be less precise. Regardless, the comparison should indicate that the conclusions drawn from the two results should be consistent. For example, the guideline could state that the simulation result will be plotted on the same graph as the actual system response. Then the two plots could be given a visual inspection to see if they look similar or not. Or a guideline could be defined such that the rise time of the transient response in the simulation should be within 20% of the rise time of the actual system response. As for the power flow guidelines, the dynamic comparison criteria should be meaningful for the Planning Coordinator’s system.

The guidelines the PC includes in its documented validation process to resolve differences in Part 1.4 could include direct coordination with the data owner, and, if necessary, through the provisions of MOD-032-1, Requirement R3 (i.e., the validation performed under this requirement could identify technical concerns with the data). In other words, while this standard is focused on validation, results of the validation may identify data provided under the

modeling data standard that needs to be corrected. If a model with estimated data or a generic model is used for a generator, and the model response does not match the actual response, then the estimated data should be corrected or a more detailed model should be requested from the data provider.

While the validation is focused on the Planning Coordinator's planning area, the model for the validation should be one that contains a wider area of the Interconnection than the Planning Coordinator's area. If the simulations can be made to match the actual system responses by reasonable changes to the data in the Planning Coordinator's area, then the Planning Coordinator should make those changes in coordination with the data provider. However, for some disturbances, the data in the Planning Coordinator's area may not be what is causing the simulations to not match actual responses. These situations should be reported to the Electric Reliability Organization (ERO). The guidelines the Planning Coordinator includes under Part 1.4 could cover these situations.

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

In FERC Order No. 693, paragraph 1210, the Commission directed inclusion of "a requirement that the models be validated against actual system responses." Furthermore, the Commission directs in paragraph 1211, "that actual system events be simulated and if the model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy." Paragraph 1220 similarly directs validation against actual system responses relative to dynamics system models. In FERC Order 890, paragraph 290, the Commission states that "the models should be updated and benchmarked to actual events." Requirement R1 addresses these directives.

Requirement R1 requires the Planning Coordinator to implement a documented data validation process to validate data in the Planning Coordinator's portion of the existing system in the steady-state and dynamic models to compare performance against expected behavior or response, which is consistent with the Commission directives. The validation of the full Interconnection-wide cases is left up to the Electric Reliability Organization (ERO) or its designees, and is not addressed by this standard. The following items were chosen for the validation requirement:

- A. Comparison of performance of the existing system in a planning power flow model to actual system behavior; and
- B. Comparison of the performance of the existing system in a planning dynamics model to actual system response.

Implementation of these validations will result in more accurate power flow and dynamic models. This, in turn, should result in better correlation between system flows and voltages

seen in power flow studies and the actual values seen by system operators during outage conditions. Similar improvements should be expected for dynamics studies, such that the results will more closely match the actual responses of the power system to disturbances.

Validation of model data is a good utility practice, but it does not easily lend itself to Reliability Standards requirement language. Furthermore, it is challenging to determine specifications for thresholds of disturbances that should be validated and how they are determined. Therefore, this requirement focuses on the Planning Coordinator performing validation pursuant to its process, which must include the attributes listed in parts 1.1 through 1.4, without specifying the details of “how” it must validate, which is necessarily dependent upon facts and circumstances. Other validations are best left to guidance rather than standard requirements.

Rationale for R2:

The Planning Coordinator will need actual system behavior data in order to perform the validations required in R1. The Reliability Coordinator or Transmission Operator may have this data. Requirement R2 requires the Reliability Coordinator and Transmission Operator to supply actual system data, if it has the data, to any requesting Planning Coordinator for purposes of model validation under Requirement R1.

This could also include information the Reliability Coordinator or Transmission Operator has at a field site. For example, if a PMU or DFR is at a generator site and it is recording the disturbance, the Reliability Coordinator or Transmission Operator would typically have that data.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|---|
| 1 | February 6, 2014 | Adopted by the NERC Board of Trustees. | Developed as a new standard for system validation to address outstanding directives from FERC Order No. 693 and recommendations from several other sources. |
| 1 | May 1, 2014 | FERC Order issued approving MOD-033-1. | |
| 2 | | Adopted by the NERC Board of Trustees. | |

A. Introduction

1. **Title:** Steady-State and Dynamic System Model Validation
2. **Number:** MOD-033-~~2~~**1**
3. **Purpose:** To establish consistent validation requirements to facilitate the collection of accurate data and building of planning models to analyze the reliability of the interconnected transmission system.

4. **Applicability:**

- 4.1. **Functional Entities:**

- ~~4.1.1 — Planning Authority and Planning Coordinator (hereafter referred to as “Planning Coordinator”)~~

- ~~4.1.24.1.1 This proposed standard combines “Planning Authority” with “Planning Coordinator” in the list of applicable functional entities. The NERC Functional Model lists “Planning Coordinator” while the registration criteria list “Planning Authority,” and they are not yet synchronized. Until that occurs, the proposed standard applies to both Planning Authority and Planning Coordinator.~~

- ~~4.1.34.1.2 Reliability Coordinator~~

- ~~4.1.44.1.3 Transmission Operator~~

5. **Effective Date:**

~~MOD-033-1 shall become effective on the first day of the first calendar quarter that is 36 months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is 36 months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction. See Implementation Plan.~~

- ~~6. **Background:**~~

~~MOD-033-1 exists in conjunction with MOD-032-1, both of which are related to system-level modeling and validation. Reliability Standard MOD-032-1 is a consolidation and replacement of existing MOD-010-0, MOD-011-0, MOD-012-0, MOD-013-1, MOD-014-0, and MOD-015-0.1, and it requires data submission by applicable data owners to their respective Transmission Planners and Planning Coordinators to support the Interconnection-wide case building process in their Interconnection. Reliability Standard MOD-033-1 is a new standard, and it requires each Planning Coordinator to implement a documented process to perform model validation within its planning area.~~

~~The transition and focus of responsibility upon the Planning Coordinator function in both standards are driven by several recommendations and FERC directives (to include several remaining directives from FERC Order No. 693), which are discussed in greater detail in the rationale sections of the standards. One of the most recent and significant set of recommendations came from the NERC Planning Committee's System Analysis and Modeling Subcommittee (SAMS). SAMS proposed several improvements to the modeling data standards, to include consolidation of the standards (that whitepaper is available from the December 2012 NERC Planning Committee's agenda package, item 3.4, beginning on page 99, here: <http://www.nerc.com/comm/PC/Agendas%20Highlights%20and%20Minutes%20DL/2012/2012-Dec-PC%20Agenda.pdf>).~~

~~The focus of validation in this standard is not Interconnection-wide phenomena, but on the Planning Coordinator's portion of the existing system. The Reliability Standard requires Planning Coordinators to implement a documented data validation process for power flow and dynamics. For the dynamics validation, the target of validation is those events that the Planning Coordinator determines are dynamic local events. A dynamic local event could include such things as closing a transmission line near a generating plant. A dynamic local event is a disturbance on the power system that produces some measurable transient response, such as oscillations. It could involve one small area of the system or a generating plant oscillating against the rest of the grid. The rest of the grid should not have a significant effect. Oscillations involving large areas of the grid are not local events. However, a dynamic local event could also be a subset of a larger disturbance involving large areas of the grid.~~

B. Requirements and Measures

- R1.** Each Planning Coordinator shall implement a documented data validation process that includes the following attributes: [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning*]
 - 1.1.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
 - 1.2.** Comparison of the performance of the Planning Coordinator's portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
 - 1.3.** Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and

1.4. Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.

- M1.** Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.
- R2.** Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation. [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]
- M2.** Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

“Compliance Enforcement Authority” means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The applicable entity shall keep data or evidence to show compliance with Requirements R1 through R2, and Measures M1 through M2, since the last audit, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If an applicable entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Refer to Section 3.0 of Appendix 4C of the NERC Rules of Procedure for a list of compliance monitoring and assessment processes.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|---------------------------|---------------|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Long-term Planning | Medium | <p>The Planning Coordinator documented and implemented a process to validate data but did not address one of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation within 28 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address two of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator documented and implemented a process to validate data but did not address three of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.1 within 24 calendar months but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months;</p> <p>OR</p> | <p>The Planning Coordinator did not have a validation process at all or did not document or implement any of the four required topics under Requirement R1;</p> <p>OR</p> <p>The Planning Coordinator did not validate its portion of the system in the power flow model as required by part 1.1 within 36 calendar months;</p> <p>OR</p> <p>The Planning Coordinator did not perform simulation as required by part 1.2 within 36 calendar</p> |

| | | | | | | |
|-----------|---------------------------|--------------|--|--|--|---|
| | | | required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation within 28 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 28 calendar months but less than or equal to 32 calendar months. | The Planning Coordinator did not perform simulation as required by part 1.2 within 24 calendar months (or the next dynamic local event in cases where there is more than 24 months between events) but did perform the simulation in greater than 32 calendar months but less than or equal to 36 calendar months. | months (or the next dynamic local event in cases where there is more than 24 months between events). |
| R2 | Long-term Planning | Lower | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 30 calendar days of the written request, but | The Reliability Coordinator or Transmission Operator did not provide requested actual system behavior data (or a written response that it does not have the requested data) to a requesting Planning Coordinator within 75 calendar days; |

| | | | | | | |
|--|--|--|--|--|--|---|
| | | | did provide the data (or written response that it does not have the requested data) in less than or equal to 45 calendar days. | did provide the data (or written response that it does not have the requested data) in greater than 45 calendar days but less than or equal to 60 calendar days. | did provide the data (or written response that it does not have the requested data) in greater than 60 calendar days but less than or equal to 75 calendar days. | OR The Reliability Coordinator or Transmission Operator provided a written response that it does not have the requested data, but actually had the data. |
|--|--|--|--|--|--|---|

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Guidelines and Technical Basis

Requirement R1:

The requirement focuses on the results-based outcome of developing a process for and performing a validation, but does not prescribe a specific method or procedure for the validation outside of the attributes specified in the requirement. For further information on suggested validation procedures, see “Procedures for Validation of Powerflow and Dynamics Cases” produced by the NERC Model Working Group.

The specific process is left to the judgment of the Planning Coordinator, but the Planning Coordinator is required to develop and include in its process guidelines for evaluating discrepancies between actual system behavior or response and expected system performance for determining whether the discrepancies are unacceptable.

For the validation in part 1.1, the state estimator case or other Real-time data should be taken as close to system peak as possible. However, other snapshots of the system could be used if deemed to be more appropriate by the Planning Coordinator. While the requirement specifies “once every 24 calendar months,” entities are encouraged to perform the comparison on a more frequent basis.

In performing the comparison required in part 1.1, the Planning Coordinator may consider, among other criteria:

1. System load;
2. Transmission topology and parameters;
3. Voltage at major buses; and
4. Flows on major transmission elements.

The validation in part 1.1 would include consideration of the load distribution and load power factors (as applicable) used in the power flow models. The validation may be made using metered load data if state estimator cases are not available. The comparison of system load distribution and load power factors shall be made on an aggregate company or power flow zone level at a minimum but may also be made on a bus by bus, load pocket (e.g., within a Balancing Authority), or smaller area basis as deemed appropriate by the Planning Coordinator.

The scope of dynamics model validation is intended to be limited, for purposes of part 1.2, to the Planning Coordinator’s planning area, and the intended emphasis under the requirement is on local events or local phenomena, not the whole Interconnection.

The validation required in part 1.2 may include simulations that are to be compared with actual system data and may include comparisons of:

- Voltage oscillations at major buses
- System frequency (for events with frequency excursions)
- Real and reactive power oscillations on generating units and major inter-area ties

Determining when a dynamic local event might occur may be unpredictable, and because of the analytic complexities involved in simulation, the time parameters in part 1.2 specify that the comparison period of “at least once every 24 calendar months” is intended to both provide for at least 24 months between dynamic local events used in the comparisons and that comparisons must be completed within 24 months of the date of the dynamic local event used. This clarification ensures that PCs will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison. With the 30 day timeframe in Requirement R2 for TOPs or RCs to provide actual system behavior data (if necessary in the comparison), it would potentially be impossible to complete the comparison within the 24 month timeframe.

In contrast, the requirement language clarifies that the time frame between dynamic local events used in the comparisons should be within 24 months of each other (or, as specified at the end of part 1.2, in the event more than 24 months passes before the next dynamic local event, the comparison should use the next dynamic local event that occurs). Each comparison must be completed within 24 months of the dynamic local event used. In this manner, the potential problem with a “month 23” dynamic local event described above is resolved. For example, if a PC uses for comparison a dynamic local event occurring on day 1 of month 1, the PC has 24 calendar months from that dynamic local event’s occurrence to complete the comparison. If the next dynamic event the PC chooses for comparison occurs in month 23, the PC has 24 months from that dynamic local event’s occurrence to complete the comparison.

Part 1.3 requires the PC to include guidelines in its documented validation process for determining when discrepancies in the comparison of simulation results with actual system results are unacceptable. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both. For the power flow comparison, as an example, this could include a guideline the Planning Coordinator will use that flows on 500 kV lines should be within 10% or 100 MW, whichever is larger. It could be different percentages or MW amounts for different voltage levels. Or, as another example, the guideline for voltage comparisons could be that it must be within 1%. But the guidelines the PC includes within its documented validation process should be meaningful for the Planning Coordinator’s system. Guidelines for the dynamic event comparison may be less precise. Regardless, the comparison should indicate that the conclusions drawn from the two results should be consistent. For example, the guideline could state that the simulation result will be plotted on the same graph as the actual system response. Then the two plots could be given a visual inspection to see if they look similar or not. Or a guideline could be defined such that the rise time of the transient response in the simulation should be within 20% of the rise time of the actual system response. As for the power flow guidelines, the dynamic comparison criteria should be meaningful for the Planning Coordinator’s system.

The guidelines the PC includes in its documented validation process to resolve differences in Part 1.4 could include direct coordination with the data owner, and, if necessary, through the provisions of MOD-032-1, Requirement R3 (i.e., the validation performed under this requirement could identify technical concerns with the data). In other words, while this standard is focused on validation, results of the validation may identify data provided under the

modeling data standard that needs to be corrected. If a model with estimated data or a generic model is used for a generator, and the model response does not match the actual response, then the estimated data should be corrected or a more detailed model should be requested from the data provider.

While the validation is focused on the Planning Coordinator's planning area, the model for the validation should be one that contains a wider area of the Interconnection than the Planning Coordinator's area. If the simulations can be made to match the actual system responses by reasonable changes to the data in the Planning Coordinator's area, then the Planning Coordinator should make those changes in coordination with the data provider. However, for some disturbances, the data in the Planning Coordinator's area may not be what is causing the simulations to not match actual responses. These situations should be reported to the Electric Reliability Organization (ERO). The guidelines the Planning Coordinator includes under Part 1.4 could cover these situations.

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R1:

In FERC Order No. 693, paragraph 1210, the Commission directed inclusion of "a requirement that the models be validated against actual system responses." Furthermore, the Commission directs in paragraph 1211, "that actual system events be simulated and if the model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy." Paragraph 1220 similarly directs validation against actual system responses relative to dynamics system models. In FERC Order 890, paragraph 290, the Commission states that "the models should be updated and benchmarked to actual events." Requirement R1 addresses these directives.

Requirement R1 requires the Planning Coordinator to implement a documented data validation process to validate data in the Planning Coordinator's portion of the existing system in the steady-state and dynamic models to compare performance against expected behavior or response, which is consistent with the Commission directives. The validation of the full Interconnection-wide cases is left up to the Electric Reliability Organization (ERO) or its designees, and is not addressed by this standard. The following items were chosen for the validation requirement:

- A. Comparison of performance of the existing system in a planning power flow model to actual system behavior; and
- B. Comparison of the performance of the existing system in a planning dynamics model to actual system response.

Implementation of these validations will result in more accurate power flow and dynamic models. This, in turn, should result in better correlation between system flows and voltages seen in power flow studies and the actual values seen by system operators during outage conditions. Similar improvements should be expected for dynamics studies, such that the results will more closely match the actual responses of the power system to disturbances.

Validation of model data is a good utility practice, but it does not easily lend itself to Reliability Standards requirement language. Furthermore, it is challenging to determine specifications for thresholds of disturbances that should be validated and how they are determined. Therefore, this requirement focuses on the Planning Coordinator performing validation pursuant to its process, which must include the attributes listed in parts 1.1 through 1.4, without specifying the details of “how” it must validate, which is necessarily dependent upon facts and circumstances. Other validations are best left to guidance rather than standard requirements.

Rationale for R2:

The Planning Coordinator will need actual system behavior data in order to perform the validations required in R1. The Reliability Coordinator or Transmission Operator may have this data. Requirement R2 requires the Reliability Coordinator and Transmission Operator to supply actual system data, if it has the data, to any requesting Planning Coordinator for purposes of model validation under Requirement R1.

This could also include information the Reliability Coordinator or Transmission Operator has at a field site. For example, if a PMU or DFR is at a generator site and it is recording the disturbance, the Reliability Coordinator or Transmission Operator would typically have that data.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|---|
| 1 | February 6, 2014 | Adopted by the NERC Board of Trustees. | Developed as a new standard for system validation to address outstanding directives from FERC Order No. 693 and recommendations from several other sources. |
| 1 | May 1, 2014 | FERC Order issued approving MOD-033-1. | |

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| <u>2</u> | | <u>Adopted by the NERC Board of Trustees.</u> | |
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A. Introduction

1. **Title:** Nuclear Plant Interface Coordination
2. **Number:** NUC-001-4
3. **Purpose:** This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Nuclear Plant Generator Operators.
 - 4.2. Transmission Entities shall mean all entities that are responsible for providing services related to Nuclear Plant Interface Requirements (NPIRs). Such entities may include one or more of the following:
 - 4.2.1 Transmission Operators.
 - 4.2.2 Transmission Owners.
 - 4.2.3 Transmission Planners.
 - 4.2.4 Transmission Service Providers.
 - 4.2.5 Balancing Authorities.
 - 4.2.6 Reliability Coordinators.
 - 4.2.7 Planning Coordinators.
 - 4.2.8 Distribution Providers.
 - 4.2.9 Generator Owners.
 - 4.2.10 Generator Operators.

Effective Date: See Implementation Plan.

B. Requirements and Measures

- R1.** The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M1.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide a copy of the transmittal and receipt of transmittal of the proposed NPIRs to the responsible Transmission Entities.
- R2.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements¹ that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** The Nuclear Plant Generator Operator and each Transmission Entity shall each have a copy of the currently effective Agreement(s) which document how the Nuclear Plant Generator Operator and the applicable Transmission Entities address and implement the NPIRs available for inspection upon request of the Compliance Enforcement Authority.
- R3.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Entity responsible for planning analyses in accordance with the Agreement shall, upon request of the Compliance Enforcement Authority, provide a copy of the planning analyses results transmitted to the Nuclear Plant Generator Operator, showing incorporation of the NPIRs. The Compliance Enforcement Authority shall refer to the Agreements developed in accordance with this standard for specific requirements.
- R4.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- 4.1.** Incorporate the NPIRs into their operating analyses of the electric system.
- 4.2.** Operate the electric system to meet the NPIRs.

¹ Agreements may include mutually agreed upon procedures or protocols in effect between entities or between departments of a vertically integrated system.

- 4.3. Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.
- M4.** Each Transmission Entity responsible for operating the electric system in accordance with the Agreement shall demonstrate or provide evidence of the following, upon request of the Compliance Enforcement Authority:
- The NPIRs have been incorporated into the current operating analysis of the electric system. (Requirement 4.1)
 - The electric system was operated to meet the NPIRs. (Requirement 4.2)
 - The Transmission Entity informed the Nuclear Plant Generator Operator when it became aware it lost the capability to assess the operation of the electric system affecting the NPIRs
- R5.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall operate the nuclear plant to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- M5.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, demonstrate or provide evidence that the nuclear power plant is being operated consistent with the NPIRs.
- R6.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M6.** The Transmission Entities and Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide evidence of the coordination between the Transmission Entities and the Nuclear Plant Generator Operator regarding outages and maintenance activities which affect the NPIRs.
- R7.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M7.** The Nuclear Plant Generator Operator shall provide evidence that it informed the applicable Transmission Entities of changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Transmission Entities to meet the NPIRs.

- R8.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M8.** The Transmission Entities shall each provide evidence that the entities informed the Nuclear Plant Generator Operator of changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Nuclear Plant Generator Operator to meet the NPIRs.
- R9.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include the following elements in aggregate within the Agreement(s) identified in R2.
- Where multiple Agreements with a single Transmission Entity are put into effect, the R9 elements must be addressed in aggregate within the Agreements; however, each Agreement does not have to contain each element. The Nuclear Plant Generator Operator and the Transmission Entity are responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements.
 - Where Agreements with multiple Transmission Entities are required, the Nuclear Plant Generator Operator is responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements with the Transmission Entities. The Agreements with each Transmission Entity do not have to contain each element; however, the Agreements with the multiple Transmission Entities, in the aggregate, must address all R9 elements. For each Agreement(s), the Nuclear Plant Generator Operator and the Transmission Entity are responsible to ensure the Agreement(s) contain(s) the elements of R9 applicable to that Transmission Entity. : *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 9.1.** Retired. *[Note: Part 9.1 was retired under the Paragraph 81 project. The NUC SDT proposes to leave this Part blank to avoid renumbering Requirement parts that would impact existing agreements throughout the industry.]*
- 9.2.** Technical requirements and analysis:
- 9.2.1.** Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the Agreement.
 - 9.2.2.** Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.

- 9.4.4.** Provisions for supplying information necessary to report to government agencies, as related to NPIRs.
- 9.4.5.** Provisions for personnel training, as related to NPIRs.

M9. The Nuclear Plant Generator Operator shall have a copy of the Agreement(s) addressing the elements in Requirement 9 available for inspection upon request of the Compliance Enforcement Authority. Each Transmission Entity shall have a copy of the Agreement(s) addressing the elements in Requirement 9 for which it is responsible available for inspection upon request of the Compliance Enforcement Authority.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

1.2. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.3. Data Retention

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- For Measure 1, the Nuclear Plant Generator Operator shall keep its latest transmittals and receipts.
- For Measure 2, the Nuclear Plant Generator Operator and each Transmission Entity shall have its current, in-force Agreement.
- For Measure 3, the Transmission Entity shall have the latest planning analysis results.
- For Measures 4, 6 and 8, the Transmission Entity shall keep evidence for two years plus current.
- For Measures 5, 6 and 7, the Nuclear Plant Generator Operator shall keep evidence for two years plus current.

If a Responsible Entity is found non-compliant it shall keep information related to the noncompliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|--|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | | Medium | The Nuclear Plant Generator Operator provided the NPIRs to the applicable entities but did not verify receipt. | The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities unless there was only one entity. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to two of the applicable entities unless there were only two entities. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to more than two of applicable entities. OR For a particular nuclear power plant, if the number of possible applicable transmission entities is equal to the number of applicable transmission entities not provided NPIRs |
| R2 | | Medium | N/A | N/A | N/A | The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|---------------------------|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | | document the implementation of the NPIRs. |
| R3 | | Medium | N/A | The responsible entity incorporated the NPIRs into its planning analyses but did not communicate the results to the Nuclear Plant Generator Operator. | N/A | The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system. |
| R4 | | High | N/A | The responsible entity did not comply with Requirement R4, Part 4.3. | The responsible entity did not comply with Requirement R4, Part R4.1. | The responsible entity did not comply with Requirement R4, Part R4.2. |
| R5 | | High | N/A | N/A | N/A | The Nuclear Plant Generator Operator failed to operate per the NPIRs developed in accordance with this standard. |
| R6 | | Medium | N/A | The Nuclear Plant Generator Operator or Transmission Entity failed to provide | The Nuclear Plant Generator Operator or Transmission Entity failed to coordinate | N/A |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|------|---|---|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements. | one or more outages or maintenance activities in accordance the requirements of the agreements. | |
| R7 | | High | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>proposed</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | N/A | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs. |
| R8 | | High | The applicable Transmission Entities did not inform the | N/A | The applicable Transmission Entities did not inform the | The applicable Transmission Entities did not inform the |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Nuclear Plant Generator Operator of <u>proposed</u> changes to transmission system design, configuration (e.g. protective relay setpoints), operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>directly impacts</u> the ability of the electric system to meet the NPIRs. |
| R9 | | Medium | | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include up to 20% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to that entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include greater than 20%, but less than 40% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include 40% or more of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|-----|---------------------------|--------------|---------------------------|---------------------------|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | applicable to the entity. | applicable to the entity. |

D. Regional Variances

The design basis for Canadian (CANDU) nuclear power plants (NPPs) does not result in the same licensing requirements as U.S. NPPs. Nuclear Regulatory Commission (NRC) design criteria specifies that in addition to emergency on-site electrical power, electrical power from the electric network also be provided to permit safe shutdown. There are no equivalent Canadian Regulatory requirements for electrical power from the electric network to be provided to permit safe shutdown. Therefore the definition of Nuclear Plant Licensing Requirements (NPLR) for Canadian CANDU NPPs will be as follows:

Canadian Nuclear Plant Licensing Requirements (CNPLR) are requirements included in the design basis of the nuclear plant and are statutorily mandated for the operation of the plant; when used in this standard, NPLR shall mean nuclear power plant licensing requirements for avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 1 | May 2, 2007 | Approved by Board of Trustees | New |
| 2 | August 5, 2009 | Adopted by Board of Trustees | Revised. Modifications for Order 716 to Requirement R9.3.5 and footnote 1; modifications to bring compliance elements into conformance with the latest version of the ERO Rules of Procedure. |
| 2 | January 22, 2010 | Approved by FERC on January 21, 2010. Added Effective Date | Update |
| 2 | February 7, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
| 2 | November 21, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02) | |
| 2.1 | April 11, 2012 | Errata approved by the Standards Committee; (Capitalized “Protection System” in accordance with Implementation Plan for Project 2007-17 approval of revised definition of “Protection System”) | Errata associated with Project 2007-17 |
| 2.1 | September 9, 2013 | Informational filing submitted to reflect the revised | |

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| | | definition of Protection System in accordance with the Implementation Plan for the revised term. | |
| 3 | March 2014 | Modifications to implement the recommendations of the five-year review of NUC-001, which was accepted by the Standards Committee on October 17, 2013. | Revision |
| 3 | August 14, 2014 | Adopted by the NERC Board of Trustees | |
| 3 | November 4, 2014 | FERC letter order issued approving NUC-001-3 | |
| 4 | | Adopted by the NERC Board of Trustees | |

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R5:

The NUC FYRT recommended R5 be revised for consistency with R4 and to clarify that nuclear plants must be operated to meet the Nuclear Plant Interface Requirements.

Rationale for R7 and R8:

The NUC FYRT recommended deleting “Protection Systems” in Requirements R7 and R8 since it is a subset of the "nuclear plant design" and "electric system design" elements currently contained in R7 and R8 respectively; and adding a parenthetical clause (e.g. protective setpoints) to R7 following "nuclear plant design" and parenthetical clause (e.g. relay setpoints) to R8 following "electric system design."

Rationale for R9:

The NUC FYRT recommended that R9 be revised to clarify that all agreements do not have to discuss each of the elements in R9, but that the sum total of the agreements need to address the elements. In addition, for clarity in Part 9.4.1, the NUC FYRT recommended that "affecting the NPIRs" be inserted following "Provisions for communications" and "applicable unique" be inserted following ""definitions of."

Rationale for R9.3.7:

The term “Special Protection Systems” (SPS) was replaced with “Remedial Action Schemes” (RAS) in order to align with other current NERC standards development work in Project 2010-05.2: Special Protection Systems. Project 2010-05.2 has proposed to replace SPS with RAS throughout all of the NERC Standards in order to move to the use of a single term. RAS and SPS have the same definition in the NERC Glossary of Terms.

A. Introduction

1. **Title:** Nuclear Plant Interface Coordination
2. **Number:** NUC-001-4
3. **Purpose:** This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Nuclear Plant Generator Operators.
 - 4.2. Transmission Entities shall mean all entities that are responsible for providing services related to Nuclear Plant Interface Requirements (NPIRs). Such entities may include one or more of the following:
 - 4.2.1 Transmission Operators.
 - 4.2.2 Transmission Owners.
 - 4.2.3 Transmission Planners.
 - 4.2.4 Transmission Service Providers.
 - 4.2.5 Balancing Authorities.
 - 4.2.6 Reliability Coordinators.
 - 4.2.7 Planning Coordinators.
 - 4.2.8 Distribution Providers.
 - 4.2.9 Generator Owners.
 - 4.2.10 Generator Operators.

Proposed Effective Date: See Implementation Plan.

B. Requirements and Measures

- R1.** The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M1.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide a copy of the transmittal and receipt of transmittal of the proposed NPIRs to the responsible Transmission Entities.
- R2.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements¹ that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** The Nuclear Plant Generator Operator and each Transmission Entity shall each have a copy of the currently effective Agreement(s) which document how the Nuclear Plant Generator Operator and the applicable Transmission Entities address and implement the NPIRs available for inspection upon request of the Compliance Enforcement Authority.
- R3.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Entity responsible for planning analyses in accordance with the Agreement shall, upon request of the Compliance Enforcement Authority, provide a copy of the planning analyses results transmitted to the Nuclear Plant Generator Operator, showing incorporation of the NPIRs. The Compliance Enforcement Authority shall refer to the Agreements developed in accordance with this standard for specific requirements.
- R4.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- 4.1.** Incorporate the NPIRs into their operating analyses of the electric system.
- 4.2.** Operate the electric system to meet the NPIRs.

¹ Agreements may include mutually agreed upon procedures or protocols in effect between entities or between departments of a vertically integrated system.

- 4.3. Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.
- M4.** Each Transmission Entity responsible for operating the electric system in accordance with the Agreement shall demonstrate or provide evidence of the following, upon request of the Compliance Enforcement Authority:
- The NPIRs have been incorporated into the current operating analysis of the electric system. (Requirement 4.1)
 - The electric system was operated to meet the NPIRs. (Requirement 4.2)
 - The Transmission Entity informed the Nuclear Plant Generator Operator when it became aware it lost the capability to assess the operation of the electric system affecting the NPIRs
- R5.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall operate the nuclear plant to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- M5.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, demonstrate or provide evidence that the nuclear power plant is being operated consistent with the NPIRs.
- R6.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
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- R7.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M7.** The Nuclear Plant Generator Operator shall provide evidence that it informed the applicable Transmission Entities of changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Transmission Entities to meet the NPIRs.

- R8.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M8.** The Transmission Entities shall each provide evidence that the entities informed the Nuclear Plant Generator Operator of changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Nuclear Plant Generator Operator to meet the NPIRs.
- R9.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include the following elements in aggregate within the Agreement(s) identified in R2.
- Where multiple Agreements with a single Transmission Entity are put into effect, the R9 elements must be addressed in aggregate within the Agreements; however, each Agreement does not have to contain each element. The Nuclear Plant Generator Operator and the Transmission Entity are responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements.
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- 9.1.** Retired. *[Note: Part 9.1 was retired under the Paragraph 81 project. The NUC SDT proposes to leave this Part blank to avoid renumbering Requirement parts that would impact existing agreements throughout the industry.]*
- 9.2.** Technical requirements and analysis:
- 9.2.1.** Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the Agreement.
 - 9.2.2.** Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.

- 9.2.3. Types of planning and operational analyses performed specifically to support the NPIRs, including the frequency of studies and types of Contingencies and scenarios required.
- 9.3. Operations and maintenance coordination
 - 9.3.1. Designation of ownership of electrical facilities at the interface between the electric system and the nuclear plant and responsibilities for operational control coordination and maintenance of these facilities.
 - 9.3.2. Identification of any maintenance requirements for equipment not owned or controlled by the Nuclear Plant Generator Operator that are necessary to meet the NPIRs.
 - 9.3.3. Coordination of testing, calibration and maintenance of on-site and off-site power supply systems and related components.
 - 9.3.4. Provisions to address mitigating actions needed to avoid violating NPIRs and to address periods when responsible Transmission Entity loses the ability to assess the capability of the electric system to meet the NPIRs. These provisions shall include responsibility to notify the Nuclear Plant Generator Operator within a specified time frame.
 - 9.3.5. Provision for considering, within the restoration process, the requirements and urgency of a nuclear plant that has lost all off-site and on-site AC power.
 - 9.3.6. Coordination of physical and cyber security protection at the nuclear plant interface to ensure each asset is covered under at least one entity's plan.
 - 9.3.7. Coordination of the NPIRs with transmission system Remedial Action Schemes and any programs that reduce or shed load based on underfrequency or undervoltage.
- 9.4. Communications and training Administrative elements:
 - 9.4.1. Provisions for communications affecting the NPIRs between the Nuclear Plant Generator Operator and Transmission Entities, including communications protocols, notification time requirements, and definitions of applicable unique terms.
 - 9.4.2. Provisions for coordination during an off-normal or emergency event affecting the NPIRs, including the need to provide timely information explaining the event, an estimate of when the system will be returned to a normal state, and the actual time the system is returned to normal.
 - 9.4.3. Provisions for coordinating investigations of causes of unplanned events affecting the NPIRs and developing solutions to minimize future risk of such events.

- 9.4.4. Provisions for supplying information necessary to report to government agencies, as related to NPIRs.
- 9.4.5. Provisions for personnel training, as related to NPIRs.

M9. The Nuclear Plant Generator Operator shall have a copy of the Agreement(s) addressing the elements in Requirement 9 available for inspection upon request of the Compliance Enforcement Authority. Each Transmission Entity shall have a copy of the Agreement(s) addressing the elements in Requirement 9 for which it is responsible available for inspection upon request of the Compliance Enforcement Authority.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

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- For Measure 1, the Nuclear Plant Generator Operator shall keep its latest transmittals and receipts.
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- For Measure 3, the Transmission Entity shall have the latest planning analysis results.
- For Measures 4, 6 and 8, the Transmission Entity shall keep evidence for two years plus current.
- For Measures 5, 6 and 7, the Nuclear Plant Generator Operator shall keep evidence for two years plus current.

If a Responsible Entity is found non-compliant it shall keep information related to the noncompliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|--------|--|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | | Medium | The Nuclear Plant Generator Operator provided the NPIRs to the applicable entities but did not verify receipt. | The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities unless there was only one entity. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to two of the applicable entities unless there were only two entities. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to more than two of applicable entities. OR For a particular nuclear power plant, if the number of possible applicable transmission entities is equal to the number of applicable transmission entities not provided NPIRs |
| R2 | | Medium | N/A | N/A | N/A | The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|---------------------------|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | | document the implementation of the NPIRs. |
| R3 | | Medium | N/A | The responsible entity incorporated the NPIRs into its planning analyses but did not communicate the results to the Nuclear Plant Generator Operator. | N/A | The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system. |
| R4 | | High | N/A | The responsible entity did not comply with Requirement R4, Part 4.3. | The responsible entity did not comply with Requirement R4, Part R4.1. | The responsible entity did not comply with Requirement R4, Part R4.2. |
| R5 | | High | N/A | N/A | N/A | The Nuclear Plant Generator Operator failed to operate per the NPIRs developed in accordance with this standard. |
| R6 | | Medium | N/A | The Nuclear Plant Generator Operator or Transmission Entity failed to provide | The Nuclear Plant Generator Operator or Transmission Entity failed to coordinate | N/A |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|------|---|---|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements. | one or more outages or maintenance activities in accordance the requirements of the agreements. | |
| R7 | | High | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>proposed</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | N/A | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs. |
| R8 | | High | The applicable Transmission Entities did not inform the | N/A | The applicable Transmission Entities did not inform the | The applicable Transmission Entities did not inform the |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--------------|--------|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | Nuclear Plant Generator Operator of <u>proposed</u> changes to transmission system design, configuration (e.g. protective relay setpoints), operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>directly impacts</u> the ability of the electric system to meet the NPIRs. |
| R9 | | Medium | | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include up to 20% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 applicable to that entity. | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include greater than 20%, but less than 40% of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 | The Agreement(s) identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entity failed to include 40% or more of the combined sub-components in Requirement R9 Parts 9.2, 9.3 and 9.4 |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
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| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | | applicable to the entity. | applicable to the entity. |

D. Regional Variances

The design basis for Canadian (CANDU) nuclear power plants (NPPs) does not result in the same licensing requirements as U.S. NPPs. Nuclear Regulatory Commission (NRC) design criteria specifies that in addition to emergency on-site electrical power, electrical power from the electric network also be provided to permit safe shutdown. There are no equivalent Canadian Regulatory requirements for electrical power from the electric network to be provided to permit safe shutdown. Therefore the definition of Nuclear Plant Licensing Requirements (NPLR) for Canadian CANDU NPPs will be as follows:

Canadian Nuclear Plant Licensing Requirements (CNPLR) are requirements included in the design basis of the nuclear plant and are statutorily mandated for the operation of the plant; when used in this standard, NPLR shall mean nuclear power plant licensing requirements for avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.

E. Interpretations

None

F. Associated Documents

None

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 1 | May 2, 2007 | Approved by Board of Trustees | New |
| 2 | August 5, 2009 | Adopted by Board of Trustees | Revised. Modifications for Order 716 to Requirement R9.3.5 and footnote 1; modifications to bring compliance elements into conformance with the latest version of the ERO Rules of Procedure. |
| 2 | January 22, 2010 | Approved by FERC on January 21, 2010. Added Effective Date | Update |
| 2 | February 7, 2013 | R9.1, R9.1.1, R9.1.2, R9.1.3, and R9.1.4 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval. | |
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| 2.1 | April 11, 2012 | Errata approved by the Standards Committee; (Capitalized “Protection System” in accordance with Implementation Plan for Project 2007-17 approval of revised definition of “Protection System”) | Errata associated with Project 2007-17 |
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| | | definition of Protection System in accordance with the Implementation Plan for the revised term. | |
| 3 | March 2014 | Modifications to implement the recommendations of the five-year review of NUC-001, which was accepted by the Standards Committee on October 17, 2013. | Revision |
| 3 | August 14, 2014 | Adopted by the NERC Board of Trustees | |
| 3 | November 4, 2014 | FERC letter order issued approving NUC-001-3 | |
| 4 | | Adopted by the NERC Board of Trustees | |

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R5:

The NUC FYRT recommended R5 be revised for consistency with R4 and to clarify that nuclear plants must be operated to meet the Nuclear Plant Interface Requirements.

Rationale for R7 and R8:

The NUC FYRT recommended deleting “Protection Systems” in Requirements R7 and R8 since it is a subset of the "nuclear plant design" and "electric system design" elements currently contained in R7 and R8 respectively; and adding a parenthetical clause (e.g. protective setpoints) to R7 following "nuclear plant design" and parenthetical clause (e.g. relay setpoints) to R8 following "electric system design."

Rationale for R9:

The NUC FYRT recommended that R9 be revised to clarify that all agreements do not have to discuss each of the elements in R9, but that the sum total of the agreements need to address the elements. In addition, for clarity in Part 9.4.1, the NUC FYRT recommended that "affecting the NPIRs" be inserted following "Provisions for communications" and "applicable unique" be inserted following ""definitions of."

Rationale for R9.3.7:

The term “Special Protection Systems” (SPS) was replaced with “Remedial Action Schemes” (RAS) in order to align with other current NERC standards development work in Project 2010-05.2: Special Protection Systems. Project 2010-05.2 has proposed to replace SPS with RAS throughout all of the NERC Standards in order to move to the use of a single term. RAS and SPS have the same definition in the NERC Glossary of Terms.

A. Introduction

1. **Title:** Nuclear Plant Interface Coordination
2. **Number:** NUC-001-~~43~~
3. **Purpose:** This standard requires coordination between Nuclear Plant Generator Operators and Transmission Entities for the purpose of ensuring nuclear plant safe operation and shutdown.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Nuclear Plant Generator Operators.
 - 4.2. Transmission Entities shall mean all entities that are responsible for providing services related to Nuclear Plant Interface Requirements (NPIRs). Such entities may include one or more of the following:
 - 4.2.1 Transmission Operators.
 - 4.2.2 Transmission Owners.
 - 4.2.3 Transmission Planners.
 - 4.2.4 Transmission Service Providers.
 - 4.2.5 Balancing Authorities.
 - 4.2.6 Reliability Coordinators.
 - 4.2.7 Planning Coordinators.
 - 4.2.8 Distribution Providers.
 - ~~4.2.9—Load Serving Entities.~~
 - ~~4.2.104.2.9~~ Generator Owners.
 - ~~4.2.114.2.10~~ Generator Operators.

5. **Effective Date:** See Implementation Plan.

Background:—~~Project 2012-13 Nuclear Power Interface Coordination seeks to implement the changes that were proposed by the NUC FYRT. The NUC FYRT was appointed by the Standards Committee Executive Committee on April 22, 2013. The NUC FYRT reviewed the NUC-001-2.1 standard to identify opportunities for consolidation and additional improvements. The NUC FYRT posted its recommendation to revise NUC-001-2.1 for industry comment on July 27, 2013. The NUC FYRT considered comments and submitted its final recommendation to revise NUC-001-2.1, along with a Standards Authorization Request (SAR) to the Standards Committee on October 17, 2013. The Standards Committee accepted~~

~~the recommendation of the FYRT and appointed the team as the Standard Drafting Team (SDT) to implement the recommendation.~~

~~5.— **Effective Dates:**— First day of the first calendar quarter that is twelve months beyond the date that this standard is approved by applicable regulatory authorities, or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is twelve months after the date this standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

B. Requirements and Measures

- R1.** The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M1.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide a copy of the transmittal and receipt of transmittal of the proposed NPIRs to the responsible Transmission Entities.
- R2.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements¹ that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M2.** The Nuclear Plant Generator Operator and each Transmission Entity shall each have a copy of the currently effective Agreement(s) which document how the Nuclear Plant Generator Operator and the applicable Transmission Entities address and implement the NPIRs available for inspection upon request of the Compliance Enforcement Authority.
- R3.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- M3.** Each Transmission Entity responsible for planning analyses in accordance with the Agreement shall, upon request of the Compliance Enforcement Authority, provide a copy of the planning analyses results transmitted to the Nuclear Plant Generator Operator, showing incorporation of the NPIRs. The Compliance Enforcement

¹ Agreements may include mutually agreed upon procedures or protocols in effect between entities or between departments of a vertically integrated system.

Authority shall refer to the Agreements developed in accordance with this standard for specific requirements.

- R4.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- 4.1.** Incorporate the NPIRs into their operating analyses of the electric system.
 - 4.2.** Operate the electric system to meet the NPIRs.
 - 4.3.** Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.
- M4.** Each Transmission Entity responsible for operating the electric system in accordance with the Agreement shall demonstrate or provide evidence of the following, upon request of the Compliance Enforcement Authority:
- The NPIRs have been incorporated into the current operating analysis of the electric system. (Requirement 4.1)
 - The electric system was operated to meet the NPIRs. (Requirement 4.2)
 - The Transmission Entity informed the Nuclear Plant Generator Operator when it became aware it lost the capability to assess the operation of the electric system affecting the NPIRs
- R5.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall operate the nuclear plant to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*
- M5.** The Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, demonstrate or provide evidence that the nuclear power plant is being operated consistent with the NPIRs.
- R6.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M6.** The Transmission Entities and Nuclear Plant Generator Operator shall, upon request of the Compliance Enforcement Authority, provide evidence of the coordination between the Transmission Entities and the Nuclear Plant Generator Operator regarding outages and maintenance activities which affect the NPIRs.
- R7.** Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design (e.g., protective relay setpoints),

configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*

- M7.** The Nuclear Plant Generator Operator shall provide evidence that it informed the applicable Transmission Entities of changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Transmission Entities to meet the NPIRs.
- R8.** Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
- M8.** The Transmission Entities shall each provide evidence that the entities informed the Nuclear Plant Generator Operator of changes to electric system design (e.g., protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the Nuclear Plant Generator Operator to meet the NPIRs.
- R9.** The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include the following elements in aggregate within the Agreement(s) identified in R2.
- Where multiple Agreements with a single Transmission Entity are put into effect, the R9 elements must be addressed in aggregate within the Agreements; however, each Agreement does not have to contain each element. The Nuclear Plant Generator Operator and the Transmission Entity are responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements.
 - Where Agreements with multiple Transmission Entities are required, the Nuclear Plant Generator Operator is responsible for ensuring all the R9 elements are addressed in aggregate within the Agreements with the Transmission Entities. The Agreements with each Transmission Entity do not have to contain each element; however, the Agreements with the multiple Transmission Entities, in the aggregate, must address all R9 elements. For each Agreement(s), the Nuclear Plant Generator Operator and the Transmission Entity are responsible to ensure the Agreement(s) contain(s) the elements of R9 applicable to that Transmission Entity. : *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
- 9.1.** Retired. *[Note: Part 9.1 was retired under the Paragraph 81 project. The NUC SDT proposes to leave this Part blank to avoid renumbering Requirement parts that would impact existing agreements throughout the industry.]*

9.2. Technical requirements and analysis:

- 9.2.1.** Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the Agreement.
- 9.2.2.** Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.
- 9.2.3.** Types of planning and operational analyses performed specifically to support the NPIRs, including the frequency of studies and types of Contingencies and scenarios required.

9.3. Operations and maintenance coordination

- 9.3.1.** Designation of ownership of electrical facilities at the interface between the electric system and the nuclear plant and responsibilities for operational control coordination and maintenance of these facilities.
- 9.3.2.** Identification of any maintenance requirements for equipment not owned or controlled by the Nuclear Plant Generator Operator that are necessary to meet the NPIRs.
- 9.3.3.** Coordination of testing, calibration and maintenance of on-site and off-site power supply systems and related components.
- 9.3.4.** Provisions to address mitigating actions needed to avoid violating NPIRs and to address periods when responsible Transmission Entity loses the ability to assess the capability of the electric system to meet the NPIRs. These provisions shall include responsibility to notify the Nuclear Plant Generator Operator within a specified time frame.
- 9.3.5.** Provision for considering, within the restoration process, the requirements and urgency of a nuclear plant that has lost all off-site and on-site AC power.
- 9.3.6.** Coordination of physical and cyber security protection at the nuclear plant interface to ensure each asset is covered under at least one entity's plan.
- 9.3.7.** Coordination of the NPIRs with transmission system Remedial Action Schemes and any programs that reduce or shed load based on underfrequency or undervoltage.

9.4. Communications and training Administrative elements:

- 9.4.1.** Provisions for communications affecting the NPIRs between the Nuclear Plant Generator Operator and Transmission Entities, including communications protocols, notification time requirements, and definitions of applicable unique terms.
- 9.4.2.** Provisions for coordination during an off-normal or emergency event affecting the NPIRs, including the need to provide timely information explaining the event, an estimate of when the system will be returned to a normal state, and the actual time the system is returned to normal.

- 9.4.3. Provisions for coordinating investigations of causes of unplanned events affecting the NPIRs and developing solutions to minimize future risk of such events.
- 9.4.4. Provisions for supplying information necessary to report to government agencies, as related to NPIRs.
- 9.4.5. Provisions for personnel training, as related to NPIRs.

M9. The Nuclear Plant Generator Operator shall have a copy of the Agreement(s) addressing the elements in Requirement 9 available for inspection upon request of the Compliance Enforcement Authority. Each Transmission Entity shall have a copy of the Agreement(s) addressing the elements in Requirement 9 for which it is responsible available for inspection upon request of the Compliance Enforcement Authority.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

1.2. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.3. Data Retention

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- For Measure 1, the Nuclear Plant Generator Operator shall keep its latest transmittals and receipts.
- For Measure 2, the Nuclear Plant Generator Operator and each Transmission Entity shall have its current, in-force Agreement.
- For Measure 3, the Transmission Entity shall have the latest planning analysis results.

- For Measures 4, 6 and 8, the Transmission Entity shall keep evidence for two years plus current.
- For Measures 5, 6 and 7, the Nuclear Plant Generator Operator shall keep evidence for two years plus current.

If a Responsible Entity is found non-compliant it shall keep information related to the noncompliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----------|--------------|---------------|--|--|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | | Medium | The Nuclear Plant Generator Operator provided the NPIRs to the applicable entities but did not verify receipt. | The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities unless there was only one entity. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to two of the applicable entities unless there were only two entities. | The Nuclear Plant Generator Operator did not provide the proposed NPIRs to more than two of applicable entities. OR For a particular nuclear power plant, if the number of possible applicable transmission entities is equal to the number of applicable transmission entities not provided NPIRs |
| R2 | | Medium | N/A | N/A | N/A | The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and document the implementation of the NPIRs. |
| R3 | | Medium | N/A | The responsible entity incorporated the NPIRs into its planning analyses but did not communicate | N/A | The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system. |

| | | | | | | |
|-----------|--|---------------|---|---|--|---|
| | | | | the results to the Nuclear Plant Generator Operator. | | |
| R4 | | High | N/A | The responsible entity did not comply with Requirement R4, Part 4.3. | The responsible entity did not comply with Requirement R4, Part R4.1. | The responsible entity did not comply with Requirement R4, Part R4.2. |
| R5 | | High | N/A | N/A | N/A | The Nuclear Plant Generator Operator failed to operate per the NPIRs developed in accordance with this standard. |
| R6 | | Medium | N/A | The Nuclear Plant Generator Operator or Transmission Entity failed to provide outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements. | The Nuclear Plant Generator Operator or Transmission Entity failed to coordinate one or more outages or maintenance activities in accordance the requirements of the agreements. | N/A |
| R7 | | High | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>proposed</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that may impact the ability of the electric system to meet the NPIRs. | N/A | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g. protective relay setpoints), configuration, operations, limits, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs. | The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities of <u>actual</u> changes to nuclear plant design (e.g., protective relay setpoints), configuration, operations, limits or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs. |
| R8 | | High | The applicable Transmission Entities did not inform the Nuclear | N/A | The applicable Transmission Entities did not inform the Nuclear | The applicable Transmission Entities did not inform the Nuclear |

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A. Introduction

1. **Title:** Automatic Underfrequency Load Shedding
2. **Number:** PRC-006-4
3. **Purpose:** To establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.
4. **Applicability:**
 - 4.1. Planning Coordinators
 - 4.2. UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:
 - 4.2.1 Transmission Owners
 - 4.2.2 Distribution Providers
 - 4.2.3 UFLS-Only Distribution Providers
 - 4.3. Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators.
5. **Effective Date:**

See Implementation Plan

B. Requirements and Measures

- R1. Each Planning Coordinator shall develop and document criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES), including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*
- M1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement R1.
- R2. Each Planning Coordinator shall identify one or more islands to serve as a basis for designing its UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*
 - 2.1. Those islands selected by applying the criteria in Requirement R1, and

notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement R3, Parts 3.1 through 3.3.

- R4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- 4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - 4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - 4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.
 - 4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - 4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - 4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - 4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement R4, Parts 4.1 through 4.7.
- R5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall coordinate its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island through one of the following: *[VRF: High][Time Horizon: Long-term Planning]*

- Develop a common UFLS program design and schedule for implementation per Requirement R3 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct a joint UFLS design assessment per Requirement R4 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct an independent UFLS design assessment per Requirement R4 for the identified island, and in the event the UFLS design assessment fails to meet Requirement R3, identify modifications to the UFLS program(s) to meet Requirement R3 and report these modifications as recommendations to the other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island and the ERO.
- M5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall have dated evidence such as joint UFLS program design documents, reports describing a joint UFLS design assessment, letters that include recommendations, or other dated documentation demonstrating that it coordinated its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island per Requirement R5.
- R6.** Each Planning Coordinator shall maintain a UFLS database containing data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M6.** Each Planning Coordinator shall have dated evidence such as a UFLS database, data requests, data input forms, or other dated documentation to show that it maintained a UFLS database for use in event analyses and assessments of the UFLS program per Requirement R6 at least once each calendar year, with no more than 15 months between maintenance activities.
- R7.** Each Planning Coordinator shall provide its UFLS database containing data necessary to model its UFLS program to other Planning Coordinators within its Interconnection within 30 calendar days of a request. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M7.** Each Planning Coordinator shall have dated evidence such as letters, memorandums, e-mails or other dated documentation that it provided their UFLS database to other Planning Coordinators within their Interconnection within 30 calendar days of a request per Requirement R7.
- R8.** Each UFLS entity shall provide data to its Planning Coordinator(s) according to the format and schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator's UFLS database. *[VRF: Lower][Time Horizon: Long-term Planning]*

- M8.** Each UFLS Entity shall have dated evidence such as responses to data requests, spreadsheets, letters or other dated documentation that it provided data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator to support maintenance of the UFLS database per Requirement R8.
- R9.** Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. *[VRF: High][Time Horizon: Long-term Planning]*
- M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays, spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, per Requirement R9.
- R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. *[VRF: High][Time Horizon: Long-term Planning]*
- M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.
- R11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- 11.1.** The performance of the UFLS equipment,
- 11.2.** The effectiveness of the UFLS program.
- M11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted an event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement R11.
- R12.** Each Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*

M12. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted a UFLS design assessment per Requirements R12 and R4 if UFLS program deficiencies are identified in R11.

R13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall coordinate its event assessment (in accordance with Requirement R11) with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event through one of the following: *[VRF: Medium][Time Horizon: Operations Assessment]*

- Conduct a joint event assessment per Requirement R11 among the Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 that reaches conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
- Conduct an independent event assessment per Requirement R11 and where the assessment fails to reach conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, identify differences in the assessments that likely resulted in the differences in the conclusions and recommendations and report these differences to the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event and the ERO.

M13. Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall have dated evidence such as a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations, or other dated documentation demonstrating it coordinated its event assessment (per Requirement R11) with all other Planning Coordinator(s) whose areas or portions of whose areas were also included in the same islanding event per Requirement R13.

R14. Each Planning Coordinator shall respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes will be made or reasons why changes will not be made to the following *[VRF: Lower][Time Horizon: Long-term Planning]*:

- 14.1. UFLS program, including a schedule for implementation
 - 14.2. UFLS design assessment
 - 14.3. Format and schedule of UFLS data submittal
- M14.** Each Planning Coordinator shall have dated evidence of responses, such as e-mails and letters, to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program per Requirement R14.
- R15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [*VRF: High*][*Time Horizon: Long-term Planning*]
- 15.1. For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.
 - 15.2. For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.
- M15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

Each Planning Coordinator and UFLS entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Planning Coordinator shall retain the current evidence of Requirements R1, R2, R3, R4, R5, R12, R14, and R15, Measures M1, M2, M3, M4, M5, M12, M14, and M15 as well as any evidence necessary to show compliance since the last compliance audit.
- Each Planning Coordinator shall retain the current evidence of UFLS database update in accordance with Requirement R6, Measure M6, and evidence of the prior year’s UFLS database update.
- Each Planning Coordinator shall retain evidence of any UFLS database transmittal to another Planning Coordinator since the last compliance audit in accordance with Requirement R7, Measure M7.
- Each UFLS entity shall retain evidence of UFLS data transmittal to the Planning Coordinator(s) since the last compliance audit in accordance with Requirement R8, Measure M8.
- Each UFLS entity shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R9, Measure M9, and evidence of adherence since the last compliance audit.
- Transmission Owner shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R10, Measure M10, and evidence of adherence since the last compliance audit.
- Each Planning Coordinator shall retain evidence of Requirements R11, and R13, and Measures M11, and M13 for 6 calendar years.

If a Planning Coordinator or UFLS entity is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the retention period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Violation Investigation

Self-Reporting

Complaints

1.4. Additional Compliance Information

None

Violation Severity Levels

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|-----------|---|---|--|
| R1 | N/A | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands.</p> <p>OR</p> <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator failed to develop and document criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> |
| R2 | N/A | <p>The Planning Coordinator identified an island(s) to</p> | <p>The Planning Coordinator identified an island(s) to serve</p> | <p>The Planning Coordinator identified an island(s) to serve</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------------|------------|---|--|---|
| | | <p>serve as a basis for designing its UFLS program but failed to include one (1) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include two (2) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include all of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) to serve as a basis for designing its UFLS program.</p> |
| <p>R3</p> | <p>N/A</p> | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet one (1) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet two (2) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet all the performance characteristic in Requirement R3, Parts 3.1, 3.2, and 3.3 in simulations of underfrequency conditions.</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|---|---|---|---|
| | | | | including notification of and a schedule for implementation by UFLS entities within its area |
| R4 | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include one (1) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include two (2) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include three (3) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 but simulation failed to include four (4) or more of the items as specified in Requirement R4, Parts 4.1 through 4.7. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2 |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| R5 | N/A | N/A | N/A | The Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, failed to coordinate its UFLS program design through one of the manners described in Requirement R5. |
| R6 | N/A | N/A | N/A | The Planning Coordinator failed to maintain a UFLS database for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. |
| R7 | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 30 calendar days and up to and including 40 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 40 calendar days but less than and including 50 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 50 calendar days but less than and including 60 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 60 calendar days following the request. OR |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|--|---|---|---|
| | | | | The Planning Coordinator failed to provide its UFLS database to other Planning Coordinators. |
| R8 | The UFLS entity provided data to its Planning Coordinator(s) less than or equal to 10 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 10 calendar days but less than or equal to 15 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity provided data to its Planning Coordinator(s) but the data was not according to the format specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> | The UFLS entity provided data to its Planning Coordinator(s) more than 15 calendar days but less than or equal to 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity failed to provide data to its Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> |
| R9 | The UFLS entity provided less than 100% but more than (and including) 95% of automatic tripping of Load in accordance with the UFLS | The UFLS entity provided less than 95% but more than (and including) 90% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 90% but more than (and including) 85% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 85% of automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|---|--|--|--|
| | program design and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. |
| R10 | The Transmission Owner provided less than 100% but more than (and including) 95% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 95% but more than (and including) 90% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 90% but more than (and including) 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. |
| R11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|--|--|--|
| | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate one (1) of the Parts as specified in Requirement R11, Parts 11.1 or 11.2.</p> | <p>conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to conduct and document an assessment of the event and evaluate the Parts as specified in Requirement R11, Parts 11.1 and 11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate all of the Parts</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|--|
| | | | | as specified in Requirement R11, Parts 11.1 and 11.2. |
| R12 | N/A | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than two years but less than or equal to 25 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 25 months but less than or equal to 26 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 26 months of event actuation. OR The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, failed to conduct and document a UFLS design assessment to consider the identified deficiencies. |
| R13 | N/A | N/A | N/A | The Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|---|---|
| | | | | <p>program, failed to coordinate its UFLS event assessment with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event in one of the manners described in Requirement R13</p> |
| R14 | N/A | N/A | N/A | <p>The Planning Coordinator failed to respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes were made or reasons why changes were not made to the items in Parts 14.1 through 14.3.</p> |
| R15 | N/A | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--|---|---|
| | | <p>characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.</p> | <p>characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.</p> | <p>characteristics in Requirement R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area.</p> <p>OR</p> <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p> |

D. Regional Variances

D.A. Regional Variance for the Quebec Interconnection

The following Interconnection-wide variance shall be applicable in the Quebec Interconnection and replaces, in their entirety, Requirements R3 and R4 and the violation severity levels associated with Requirements R3 and R4.

Rationale for Requirement D.A.3:

There are two modifications for requirement D.A.3 :

1. 25% Generation Deficiency : Since the Quebec Interconnection has no potential viable BES Island in underfrequency conditions, the largest generation deficiency scenarios are limited to extreme contingencies not already covered by RAS.

Based on Hydro-Québec TransÉnergie Transmission Planning requirements, the stability of the network shall be maintained for extreme contingencies using a case representing internal transfers not expected to be exceeded 25% of the time.

The Hydro-Québec TransÉnergie defense plan to cover these extreme contingencies includes two RAS (RPTC- generation rejection and remote load shedding and TDST - a centralized UVLS) and the UFLS.

2. Frequency performance curve (attachment 1A) : Specific cases where a small generation deficiency using a peak case scenario with the minimum requirement of spinning reserve can lead to an acceptable frequency deviation in the Quebec Interconnection while stabilizing between the PRC-006-2 requirement (59.3 Hz) and the UFLS anti-stall threshold (59.0 Hz).

An increase of the anti-stall threshold to 59.3 Hz would correct this situation but would cause frequent load shedding of customers without any gain of system reliability. Therefore, it is preferable to lower the steady state frequency minimum value to 59.0 Hz.

The delay in the performance characteristics curve is harmonized between D.A.3 and R.3 to 60 seconds.

Rationale for Requirements D.A.3.3. and D.A.4:

The Quebec Interconnection has its own definition of BES. In Quebec, the vast majority of BES generating plants/facilities are not directly connected to the BES. For simulations to take into account sufficient generating resources D.A.3.3 and D.A.4 need simply refer to BES generators, plants or facilities since these are listed in a Registry approved by Québec's Regulatory Body (Régie de l'Énergie).

- D.A.3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from each of these extreme events:

- Loss of the entire capability of a generating station.
- Loss of all transmission circuits emanating from a generating station, switching station, substation or dc terminal.
- Loss of all transmission circuits on a common right-of-way.
- Three-phase fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.
- Three-phase fault on a circuit breaker, with normal fault clearing.
- The operation or partial operation of a RAS for an event or condition for which it was not intended to operate.

[VRF: High][Time Horizon: Long-term Planning]

- D.A.3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
 - D.A.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
 - D.A.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each Quebec BES generator bus and associated generator step-up transformer high-side bus
- M.D.A.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.A.3 Parts D.A.3.1 through D.A.3.3.
- D.A.4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 for each island identified in Requirement R2. The simulation shall model each of the following; *[VRF: High][Time Horizon: Long-term Planning]*

- D.A.4.1** Underfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1A, and
 - D.A.4.2** Overfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 - Attachment 1A, and
 - D.A.4.3** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.A.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement D.A.4 Parts D.A.4.1 through D.A.4.3.

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|--|
| DA3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Parts D.A.3.1, D.A.3.2, and D.A.3.3 in simulations of underfrequency conditions</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| DA4 | N/A | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include one (1) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include two (2) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include all of the items as</p> |

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----|-----------|---|---|--|
| | | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 and D.A.4.3. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 |

D.B. Regional Variance for the Western Electricity Coordinating Council

The following Interconnection-wide variance shall be applicable in the Western Electricity Coordinating Council (WECC) and replaces, in their entirety, Requirements R1, R2, R3, R4, R5, R11, R12, and R13.

D.B.1. Each Planning Coordinator shall participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that develops and documents criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES) that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*

M.D.B.1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria, developed as part of the joint regional review with other Planning Coordinators in the WECC Regional Entity area to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement D.B.1.

D.B.2. Each Planning Coordinator shall identify one or more islands from the regional review (per D.B.1) to serve as a basis for designing a region-wide coordinated UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*

D.B.2.1. Those islands selected by applying the criteria in Requirement D.B.1, and

D.B.2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System.

M.D.B.2. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s), from the regional review (per D.B.1), as a basis for designing a region-wide coordinated UFLS program that meet the criteria in Requirement D.B.2 Parts D.B.2.1 and D.B.2.2.

D.B.3. Each Planning Coordinator shall adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*

D.B.3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

Generator Underfrequency Trip Modeling curve in PRC-006-4 - Attachment 1.

- D.B.4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - D.B.4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - D.B.4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-4 — Attachment 1.
 - D.B.4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.B.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its participation in a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area that demonstrates it meets Requirement D.B.4 Parts D.B.4.1 through D.B.4.7.
- D.B.11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall participate in and document a coordinated event assessment with all affected Planning Coordinators to conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- D.B.11.1.** The performance of the UFLS equipment,
 - D.B.11.2** The effectiveness of the UFLS program
- M.D.B.11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a coordinated event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement D.B.11.
- D.B.12.** Each Planning Coordinator, in whose islanding event assessment (per D.B.11) UFLS program deficiencies are identified, shall participate in and document a coordinated UFLS design assessment of the UFLS program with the other

Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*

- M.D.B.12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a UFLS design assessment per Requirements D.B.12 and D.B.4 if UFLS program deficiencies are identified in D.B.11.

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-------|-----------|--|---|--|
| D.B.1 | N/A | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> <p>OR</p> <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator failed to participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas that may form islands</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|-----------|--|--|--|
| D.B.2 | N/A | N/A | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include one (1) of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include all of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) from the regional review to serve as a basis for designing its UFLS program.</p> |
| D.B.3 | N/A | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, and D.B.3.3 in simulations of underfrequency conditions</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|---------------------|---|---|---|--|
| | | | | <p>OR</p> <p>The Planning Coordinator failed to adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| <p>D.B.4</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include one (1) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include two (2) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include three (3) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include four (4) or more of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> <p>OR</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----------------------|---|--|--|--|
| | | | | <p>The Planning Coordinator failed to participate in and document a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2</p> |
| <p>D.B.11</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than one year but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 13 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 14 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|--|--|--|---|
| | <p>less than or equal to 13 months of actuation.</p> | <p>less than or equal to 14 months of actuation.</p> | <p>less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate one (1) of the parts as specified in Requirement D.B.11, Parts D.B.11.1 or D.B.11.2.</p> | <p>time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to participate in and document a coordinated event assessment with all Planning Coordinators whose areas or portion of whose areas were also included in the same island event and evaluate the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----------------------|------------|---|---|--|
| | | | | <p>in the same islanding event within one year of event actuation but failed to evaluate all of the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> |
| <p>D.B.12</p> | <p>N/A</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than two years but less than or equal to 25 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 25 months but less than or equal to 26 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 26 months of event actuation.</p> <p>OR</p> <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, failed to participate in and document a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area</p> |

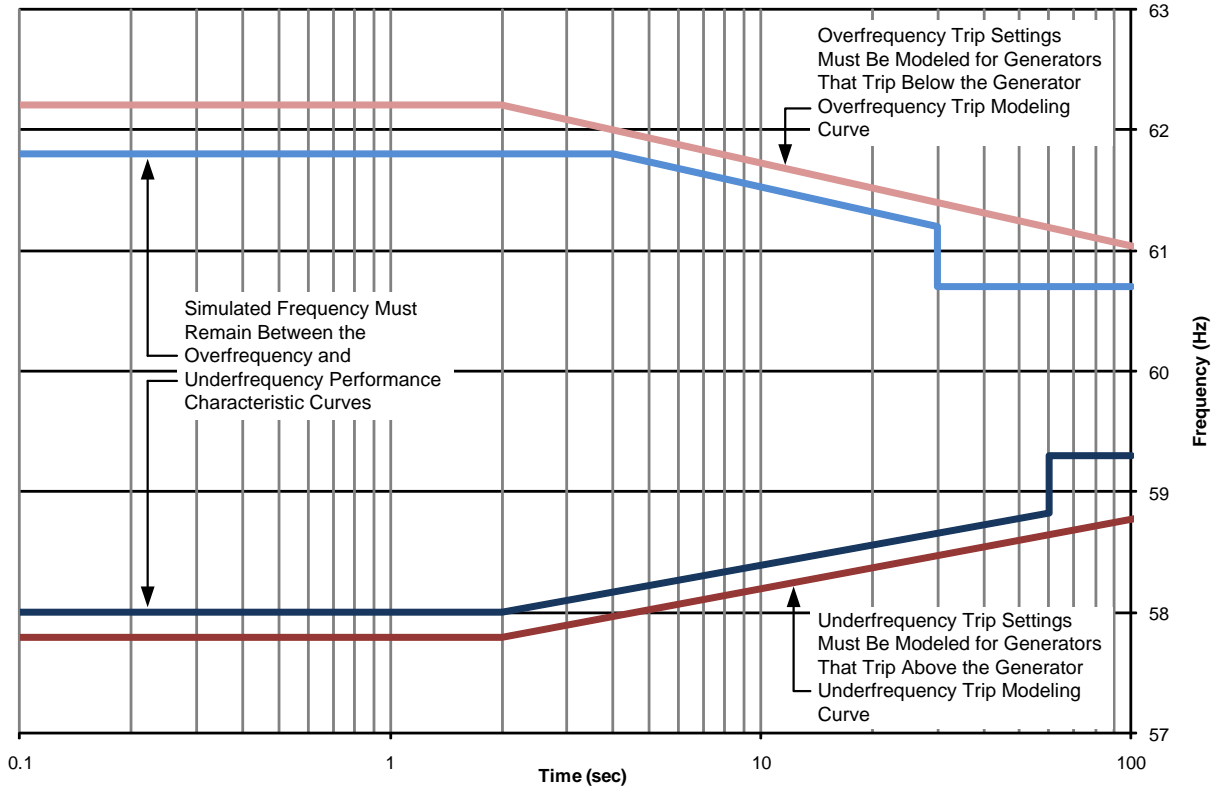
| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--------------|----------|---|
| | | | | to consider the identified deficiencies |

E. Associated Documents

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | May 25, 2010 | Completed revision, merging and updating PRC-006-0, PRC-007-0 and PRC-009-0. | |
| 1 | November 4, 2010 | Adopted by the Board of Trustees | |
| 1 | May 7, 2012 | FERC Order issued approving PRC-006-1 (approval becomes effective July 10, 2012) | |
| 1 | November 9, 2012 | FERC Letter Order issued accepting the modification of the VRF in R5 from (Medium to High) and the modification of the VSL language in R8. | |
| 2 | November 13, 2014 | Adopted by the Board of Trustees | Revisions made under Project 2008-02: Undervoltage Load Shedding (UVLS) & Underfrequency Load Shedding (UFLS) to address directive issued in FERC Order No. 763. Revisions to existing Requirement R9 and R10 and addition of new Requirement R15. |
| 3 | August 10, 2017 | Adopted by the NERC Board of Trustees | Revisions to the Regional Variance for the Quebec Interconnection. |
| 4 | | Adopted by the NERC Board of Trustees | |

PRC-006-4 – Attachment 1
Underfrequency Load Shedding Program
Design Performance and Modeling Curves for
Requirements R3 Parts 3.1-3.2 and R4 Parts 4.1-4.6

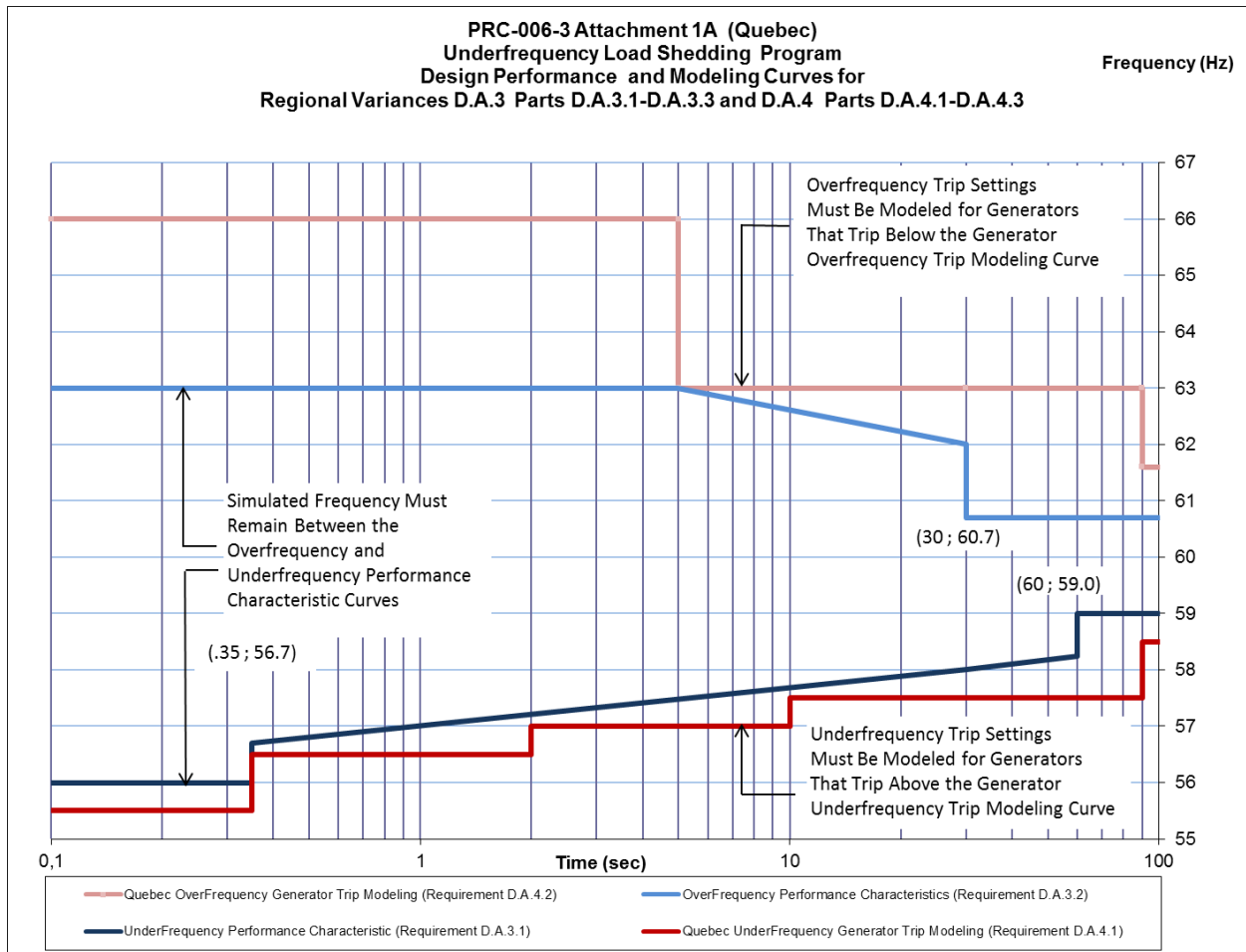


- ⚡⚡⚡⚡ Generator Overfrequency Trip Modeling (Requirement R4 Parts 4.4-4.6)
- ⚡⚡⚡⚡ Overfrequency Performance Characteristic (Requirement R3 Part 3.2)
- ⚡⚡⚡⚡ Underfrequency Performance Characteristic (Requirement R3 Part 3.1)
- ⚡⚡⚡⚡ Generator Underfrequency Trip Modeling (Requirement R4 Parts 4.1-4.3)

Curve Definitions

| Generator Overfrequency Trip Modeling | | Overfrequency Performance Characteristic | | |
|---------------------------------------|--|--|--|-----------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 4 \text{ s}$ | $4 \text{ s} < t \leq 30 \text{ s}$ | $t > 30 \text{ s}$ |
| $f = 62.2 \text{ Hz}$ | $f = -0.686\log(t) + 62.41 \text{ Hz}$ | $f = 61.8 \text{ Hz}$ | $f = -0.686\log(t) + 62.21 \text{ Hz}$ | $f = 60.7 \text{ Hz}$ |

| Generator Underfrequency Trip Modeling | | Underfrequency Performance Characteristic | | |
|--|--|---|--|-----------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 2 \text{ s}$ | $2 \text{ s} < t \leq 60 \text{ s}$ | $t > 60 \text{ s}$ |
| $f = 57.8 \text{ Hz}$ | $f = 0.575 \log(t) + 57.63 \text{ Hz}$ | $f = 58.0 \text{ Hz}$ | $f = 0.575 \log(t) + 57.83 \text{ Hz}$ | $f = 59.3 \text{ Hz}$ |



Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R9:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a Planning Coordinator (PC) assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R10:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R15:

Requirement R15 was added in response to the directive from FERC Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. Requirement R15 addresses the FERC directive by making explicit that if deficiencies are identified as a result of an assessment, the PC shall develop a Corrective Action Plan and schedule for implementation by the UFLS entities.

A “Corrective Action Plan” is defined in the NERC Glossary of Terms as, “a list of actions and an associated timetable for implementation to remedy a specific problem.” Thus, the Corrective Action Plan developed by the PC will identify the specific timeframe for an entity to implement corrections to remedy any deficiencies identified by the PC as a result of an assessment.

A. Introduction

1. **Title:** Automatic Underfrequency Load Shedding
2. **Number:** PRC-006-4
3. **Purpose:** To establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.
4. **Applicability:**
 - 4.1. Planning Coordinators
 - 4.2. UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:
 - 4.2.1 Transmission Owners
 - 4.2.2 Distribution Providers
 - 4.2.3 UFLS-Only Distribution Providers¹
 - 4.3. Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators.
5. **Effective Date:**

See Implementation Plan

B. Requirements and Measures

- R1. Each Planning Coordinator shall develop and document criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES), including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands. [*VRF: Medium*][*Time Horizon: Long-term Planning*]
- M1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement R1.
- R2. Each Planning Coordinator shall identify one or more islands to serve as a basis for designing its UFLS program including: [*VRF: Medium*][*Time Horizon: Long-term Planning*]

¹ NERC Rules of Procedure, Appendix 5
https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC_ROP_Effective_20160504.pdf

- 2.1. Those islands selected by applying the criteria in Requirement R1, and
 - 2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System, and
 - 2.3. A single island that includes all portions of the BES in either the Regional Entity area or the Interconnection in which the Planning Coordinator's area resides. If a Planning Coordinator's area resides in multiple Regional Entity areas, each of those Regional Entity areas shall be identified as an island. Planning Coordinators may adjust island boundaries to differ from Regional Entity area boundaries by mutual consent where necessary for the sole purpose of producing contiguous regional islands more suitable for simulation.
- M2.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s) as a basis for designing a UFLS program that meet the criteria in Requirement R2, Parts 2.1 through 2.3.
- R3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). [*VRF: High*][*Time Horizon: Long-term Planning*]
- 3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-~~3-4~~ - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
 - 3.2. Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-~~3-4~~ - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
 - 3.3. Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.

- M3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement R3, Parts 3.1 through 3.3.
- R4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- 4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3-4~~ - Attachment 1.
 - 4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3-4~~ - Attachment 1.
 - 4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3-4~~ - Attachment 1.
 - 4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3-4~~ — Attachment 1.
 - 4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3-4~~ — Attachment 1.
 - 4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3-4~~ — Attachment 1.
 - 4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement R4, Parts 4.1 through 4.7.
- R5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall coordinate its UFLS program design

with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island through one of the following: *[VRF: High][Time Horizon: Long-term Planning]*

- Develop a common UFLS program design and schedule for implementation per Requirement R3 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct a joint UFLS design assessment per Requirement R4 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct an independent UFLS design assessment per Requirement R4 for the identified island, and in the event the UFLS design assessment fails to meet Requirement R3, identify modifications to the UFLS program(s) to meet Requirement R3 and report these modifications as recommendations to the other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island and the ERO.
- M5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall have dated evidence such as joint UFLS program design documents, reports describing a joint UFLS design assessment, letters that include recommendations, or other dated documentation demonstrating that it coordinated its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island per Requirement R5.
- R6.** Each Planning Coordinator shall maintain a UFLS database containing data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M6.** Each Planning Coordinator shall have dated evidence such as a UFLS database, data requests, data input forms, or other dated documentation to show that it maintained a UFLS database for use in event analyses and assessments of the UFLS program per Requirement R6 at least once each calendar year, with no more than 15 months between maintenance activities.
- R7.** Each Planning Coordinator shall provide its UFLS database containing data necessary to model its UFLS program to other Planning Coordinators within its Interconnection within 30 calendar days of a request. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M7.** Each Planning Coordinator shall have dated evidence such as letters, memorandums, e-mails or other dated documentation that it provided their UFLS database to other Planning Coordinators within their Interconnection within 30 calendar days of a request per Requirement R7.

- R8.** Each UFLS entity shall provide data to its Planning Coordinator(s) according to the format and schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M8.** Each UFLS Entity shall have dated evidence such as responses to data requests, spreadsheets, letters or other dated documentation that it provided data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator to support maintenance of the UFLS database per Requirement R8.
- R9.** Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. *[VRF: High][Time Horizon: Long-term Planning]*
- M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays, spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, per Requirement R9.
- R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. *[VRF: High][Time Horizon: Long-term Planning]*
- M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.
- R11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- 11.1.** The performance of the UFLS equipment,
- 11.2.** The effectiveness of the UFLS program.
- M11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted an event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement R11.

- R12.** Each Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*
- M12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted a UFLS design assessment per Requirements R12 and R4 if UFLS program deficiencies are identified in R11.
- R13.** Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall coordinate its event assessment (in accordance with Requirement R11) with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event through one of the following: *[VRF: Medium][Time Horizon: Operations Assessment]*
- Conduct a joint event assessment per Requirement R11 among the Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
 - Conduct an independent event assessment per Requirement R11 that reaches conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
 - Conduct an independent event assessment per Requirement R11 and where the assessment fails to reach conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, identify differences in the assessments that likely resulted in the differences in the conclusions and recommendations and report these differences to the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event and the ERO.
- M13.** Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall have dated evidence such as a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations, or other dated documentation demonstrating it coordinated its event assessment (per Requirement R11) with all other Planning Coordinator(s) whose areas or portions of whose areas were also included in the same islanding event per Requirement R13.

- R14.** Each Planning Coordinator shall respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes will be made or reasons why changes will not be made to the following [*VRF: Lower*][*Time Horizon: Long-term Planning*]:
- 14.1.** UFLS program, including a schedule for implementation
 - 14.2.** UFLS design assessment
 - 14.3.** Format and schedule of UFLS data submittal
- M14.** Each Planning Coordinator shall have dated evidence of responses, such as e-mails and letters, to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program per Requirement R14.
- R15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [*VRF: High*][*Time Horizon: Long-term Planning*]
- 15.1.** For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.
 - 15.2.** For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.
- M15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

Each Planning Coordinator and UFLS entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Planning Coordinator shall retain the current evidence of Requirements R1, R2, R3, R4, R5, R12, R14, and R15, Measures M1, M2, M3, M4, M5, M12, M14, and M15 as well as any evidence necessary to show compliance since the last compliance audit.
- Each Planning Coordinator shall retain the current evidence of UFLS database update in accordance with Requirement R6, Measure M6, and evidence of the prior year’s UFLS database update.
- Each Planning Coordinator shall retain evidence of any UFLS database transmittal to another Planning Coordinator since the last compliance audit in accordance with Requirement R7, Measure M7.
- Each UFLS entity shall retain evidence of UFLS data transmittal to the Planning Coordinator(s) since the last compliance audit in accordance with Requirement R8, Measure M8.
- Each UFLS entity shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R9, Measure M9, and evidence of adherence since the last compliance audit.
- Transmission Owner shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R10, Measure M10, and evidence of adherence since the last compliance audit.
- Each Planning Coordinator shall retain evidence of Requirements R11, and R13, and Measures M11, and M13 for 6 calendar years.

If a Planning Coordinator or UFLS entity is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the retention period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Violation Investigation

Self-Reporting

Complaints

1.4. Additional Compliance Information

None

Violation Severity Levels

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|-----------|---|---|--|
| R1 | N/A | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands.</p> <p>OR</p> <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator failed to develop and document criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> |
| R2 | N/A | <p>The Planning Coordinator identified an island(s) to</p> | <p>The Planning Coordinator identified an island(s) to serve</p> | <p>The Planning Coordinator identified an island(s) to serve</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|--|---|
| | | <p>serve as a basis for designing its UFLS program but failed to include one (1) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include two (2) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include all of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) to serve as a basis for designing its UFLS program.</p> |
| R3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet one (1) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet two (2) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet all the performance characteristic in Requirement R3, Parts 3.1, 3.2, and 3.3 in simulations of underfrequency conditions.</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|---|---|---|---|
| | | | | including notification of and a schedule for implementation by UFLS entities within its area |
| R4 | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include one (1) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include two (2) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include three (3) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 but simulation failed to include four (4) or more of the items as specified in Requirement R4, Parts 4.1 through 4.7. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2 |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| R5 | N/A | N/A | N/A | The Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, failed to coordinate its UFLS program design through one of the manners described in Requirement R5. |
| R6 | N/A | N/A | N/A | The Planning Coordinator failed to maintain a UFLS database for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. |
| R7 | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 30 calendar days and up to and including 40 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 40 calendar days but less than and including 50 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 50 calendar days but less than and including 60 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 60 calendar days following the request. OR |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|--|---|---|---|
| | | | | The Planning Coordinator failed to provide its UFLS database to other Planning Coordinators. |
| R8 | The UFLS entity provided data to its Planning Coordinator(s) less than or equal to 10 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 10 calendar days but less than or equal to 15 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity provided data to its Planning Coordinator(s) but the data was not according to the format specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> | The UFLS entity provided data to its Planning Coordinator(s) more than 15 calendar days but less than or equal to 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity failed to provide data to its Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> |
| R9 | The UFLS entity provided less than 100% but more than (and including) 95% of automatic tripping of Load in accordance with the UFLS | The UFLS entity provided less than 95% but more than (and including) 90% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 90% but more than (and including) 85% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 85% of automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|---|--|--|--|
| | program design and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. |
| R10 | The Transmission Owner provided less than 100% but more than (and including) 95% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 95% but more than (and including) 90% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 90% but more than (and including) 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. |
| R11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|--|--|--|
| | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate one (1) of the Parts as specified in Requirement R11, Parts 11.1 or 11.2.</p> | <p>conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to conduct and document an assessment of the event and evaluate the Parts as specified in Requirement R11, Parts 11.1 and 11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate all of the Parts</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--|--|--|
| | | | | as specified in Requirement R11, Parts 11.1 and 11.2. |
| R12 | N/A | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than two years but less than or equal to 25 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 25 months but less than or equal to 26 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 26 months of event actuation. OR The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, failed to conduct and document a UFLS design assessment to consider the identified deficiencies. |
| R13 | N/A | N/A | N/A | The Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|---|---|
| | | | | <p>program, failed to coordinate its UFLS event assessment with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event in one of the manners described in Requirement R13</p> |
| R14 | N/A | N/A | N/A | <p>The Planning Coordinator failed to respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes were made or reasons why changes were not made to the items in Parts 14.1 through 14.3.</p> |
| R15 | N/A | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--|---|---|
| | | <p>characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.</p> | <p>characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.</p> | <p>characteristics in Requirement R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area.</p> <p>OR</p> <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p> |

D. Regional Variances

D.A. Regional Variance for the Quebec Interconnection

The following Interconnection-wide variance shall be applicable in the Quebec Interconnection and replaces, in their entirety, Requirements R3 and R4 and the violation severity levels associated with Requirements R3 and R4.

Rationale for Requirement D.A.3:

There are two modifications for requirement D.A.3 :

1. 25% Generation Deficiency : Since the Quebec Interconnection has no potential viable BES Island in underfrequency conditions, the largest generation deficiency scenarios are limited to extreme contingencies not already covered by RAS.

Based on Hydro-Québec TransÉnergie Transmission Planning requirements, the stability of the network shall be maintained for extreme contingencies using a case representing internal transfers not expected to be exceeded 25% of the time.

The Hydro-Québec TransÉnergie defense plan to cover these extreme contingencies includes two RAS (RPTC- generation rejection and remote load shedding and TDST - a centralized UVLS) and the UFLS.

2. Frequency performance curve (attachment 1A) : Specific cases where a small generation deficiency using a peak case scenario with the minimum requirement of spinning reserve can lead to an acceptable frequency deviation in the Quebec Interconnection while stabilizing between the PRC-006-2 requirement (59.3 Hz) and the UFLS anti-stall threshold (59.0 Hz).

An increase of the anti-stall threshold to 59.3 Hz would correct this situation but would cause frequent load shedding of customers without any gain of system reliability. Therefore, it is preferable to lower the steady state frequency minimum value to 59.0 Hz.

The delay in the performance characteristics curve is harmonized between D.A.3 and R.3 to 60 seconds.

Rationale for Requirements D.A.3.3. and D.A.4:

The Quebec Interconnection has its own definition of BES. In Quebec, the vast majority of BES generating plants/facilities are not directly connected to the BES. For simulations to take into account sufficient generating resources D.A.3.3 and D.A.4 need simply refer to BES generators, plants or facilities since these are listed in a Registry approved by Québec's Regulatory Body (Régie de l'Énergie).

D.A.3. Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from each of these extreme events:

- Loss of the entire capability of a generating station.
- Loss of all transmission circuits emanating from a generating station, switching station, substation or dc terminal.
- Loss of all transmission circuits on a common right-of-way.
- Three-phase fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.
- Three-phase fault on a circuit breaker, with normal fault clearing.
- The operation or partial operation of a RAS for an event or condition for which it was not intended to operate.

[VRF: High][Time Horizon: Long-term Planning]

- D.A.3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-~~3-4~~ - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-~~3-4~~ - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each Quebec BES generator bus and associated generator step-up transformer high-side bus

M.D.A.3. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.A.3 Parts D.A.3.1 through D.A.3.3.

D.A.4. Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 for each island identified in Requirement R2. The simulation shall model each of the following; *[VRF: High][Time Horizon: Long-term Planning]*

- D.A.4.1** Underfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3~~4 - Attachment 1A, and
 - D.A.4.2** Overfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3~~4 - Attachment 1A, and
 - D.A.4.3** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.A.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement D.A.4 Parts D.A.4.1 through D.A.4.3.

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|---|---|---|
| DA3 | N/A | The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions | The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions | The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Parts D.A.3.1, D.A.3.2, and D.A.3.3 in simulations of underfrequency conditions OR The Planning Coordinator failed to develop a UFLS program including notification of and a schedule for implementation by UFLS entities within its area. |
| DA4 | N/A | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include one (1) of the items as | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include two (2) of the items as | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include all of the items as |

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----|-----------|---|---|--|
| | | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 and D.A.4.3. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 |

D.B. Regional Variance for the Western Electricity Coordinating Council

The following Interconnection-wide variance shall be applicable in the Western Electricity Coordinating Council (WECC) and replaces, in their entirety, Requirements R1, R2, R3, R4, R5, R11, R12, and R13.

D.B.1. Each Planning Coordinator shall participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that develops and documents criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES) that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*

M.D.B.1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria, developed as part of the joint regional review with other Planning Coordinators in the WECC Regional Entity area to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement D.B.1.

D.B.2. Each Planning Coordinator shall identify one or more islands from the regional review (per D.B.1) to serve as a basis for designing a region-wide coordinated UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*

D.B.2.1. Those islands selected by applying the criteria in Requirement D.B.1, and

D.B.2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System.

M.D.B.2. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s), from the regional review (per D.B.1), as a basis for designing a region-wide coordinated UFLS program that meet the criteria in Requirement D.B.2 Parts D.B.2.1 and D.B.2.2.

D.B.3. Each Planning Coordinator shall adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*

D.B.3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-~~3-4~~ - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- D.B.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-~~34~~ - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
- D.B.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - D.B.3.3.1.** Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - D.B.3.3.2.** Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - D.B.3.3.3.** Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M.D.B.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its adoption of a UFLS program, coordinated across the WECC Regional Entity area, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.B.3 Parts D.B.3.1 through D.B.3.3.
- D.B.4.** Each Planning Coordinator shall participate in and document a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
 - D.B.4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~34~~ - Attachment 1.
 - D.B.4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~34~~ - Attachment 1.
 - D.B.4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the

- Generator Underfrequency Trip Modeling curve in PRC-006-~~3~~4 - Attachment 1.
- D.B.4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3~~4 — Attachment 1.
 - D.B.4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3~~4 — Attachment 1.
 - D.B.4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-~~3~~4 — Attachment 1.
 - D.B.4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M.D.B.4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its participation in a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area that demonstrates it meets Requirement D.B.4 Parts D.B.4.1 through D.B.4.7.
- D.B.11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall participate in and document a coordinated event assessment with all affected Planning Coordinators to conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- D.B.11.1.** The performance of the UFLS equipment,
 - D.B.11.2** The effectiveness of the UFLS program
- M.D.B.11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a coordinated event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement D.B.11.
- D.B.12.** Each Planning Coordinator, in whose islanding event assessment (per D.B.11) UFLS program deficiencies are identified, shall participate in and document a coordinated UFLS design assessment of the UFLS program with the other

Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*

- M.D.B.12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a UFLS design assessment per Requirements D.B.12 and D.B.4 if UFLS program deficiencies are identified in D.B.11.

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-------|-----------|--|---|--|
| D.B.1 | N/A | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> <p>OR</p> <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator failed to participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas that may form islands</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|-----------|--|--|--|
| D.B.2 | N/A | N/A | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include one (1) of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include all of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) from the regional review to serve as a basis for designing its UFLS program.</p> |
| D.B.3 | N/A | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, and D.B.3.3 in simulations of underfrequency conditions</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|---------------------|---|---|---|--|
| | | | | <p>OR</p> <p>The Planning Coordinator failed to adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| <p>D.B.4</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include one (1) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include two (2) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include three (3) of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> | <p>The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include four (4) or more of the items as specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7.</p> <p>OR</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----------------------|---|--|--|--|
| | | | | <p>The Planning Coordinator failed to participate in and document a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2</p> |
| <p>D.B.11</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than one year but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 13 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 14 months but</p> | <p>The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| | less than or equal to 13 months of actuation. | less than or equal to 14 months of actuation. | less than or equal to 15 months of actuation. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate one (1) of the parts as specified in Requirement D.B.11, Parts D.B.11.1 or D.B.11.2. | time greater than 15 months of actuation. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to participate in and document a coordinated event assessment with all Planning Coordinators whose areas or portion of whose areas were also included in the same island event and evaluate the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2. OR The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----------------------|------------|---|---|--|
| | | | | <p>in the same islanding event within one year of event actuation but failed to evaluate all of the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> |
| <p>D.B.12</p> | <p>N/A</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than two years but less than or equal to 25 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 25 months but less than or equal to 26 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 26 months of event actuation.</p> <p>OR</p> <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, failed to participate in and document a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--------------|----------|---|
| | | | | to consider the identified deficiencies |

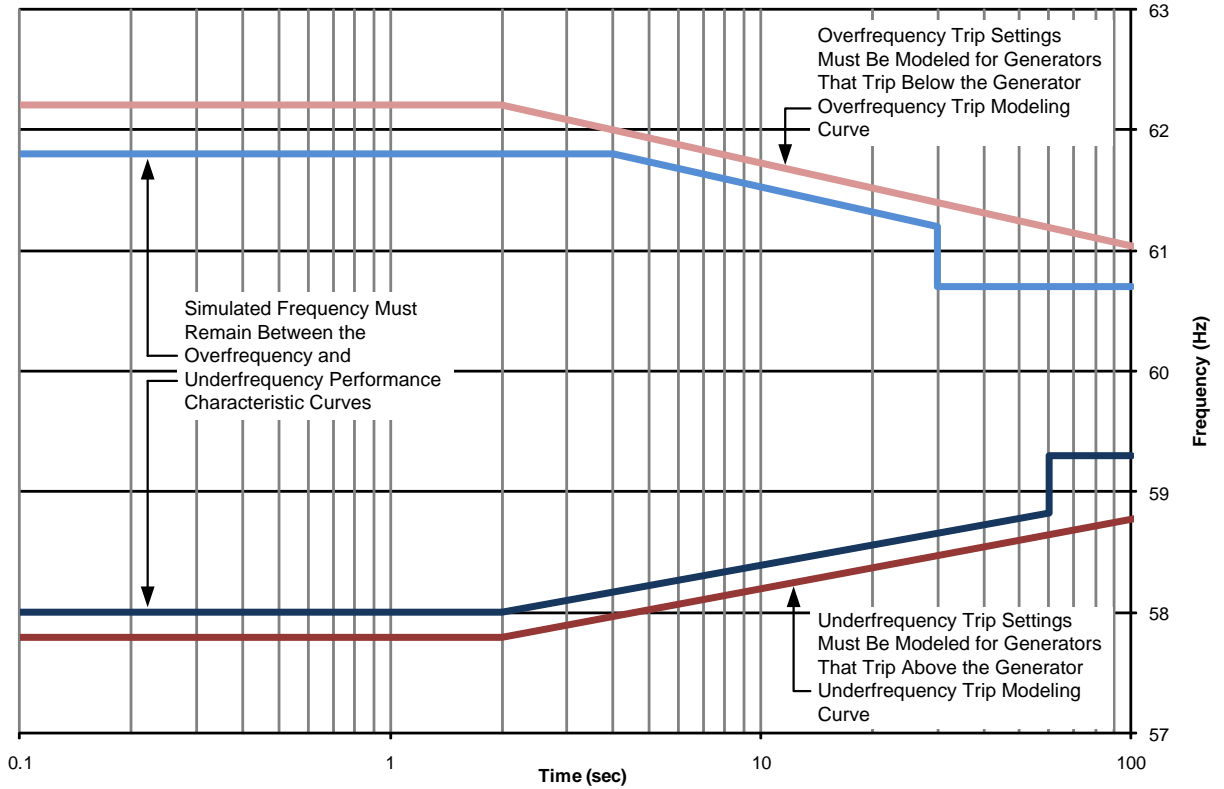
E. Associated Documents

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | May 25, 2010 | Completed revision, merging and updating PRC-006-0, PRC-007-0 and PRC-009-0. | |
| 1 | November 4, 2010 | Adopted by the Board of Trustees | |
| 1 | May 7, 2012 | FERC Order issued approving PRC-006-1 (approval becomes effective July 10, 2012) | |
| 1 | November 9, 2012 | FERC Letter Order issued accepting the modification of the VRF in R5 from (Medium to High) and the modification of the VSL language in R8. | |
| 2 | November 13, 2014 | Adopted by the Board of Trustees | Revisions made under Project 2008-02: Undervoltage Load Shedding (UVLS) & Underfrequency Load Shedding (UFLS) to address directive issued in FERC Order No. 763. Revisions to existing Requirement R9 and R10 and addition of new Requirement R15. |
| 3 | August 10, 2017 | Adopted by the NERC Board of Trustees | Revisions to the Regional Variance for the Quebec Interconnection. |
| 4 | | Adopted by the NERC Board of Trustees | |

PRC-006-~~3~~4 – Attachment 1

**Underfrequency Load Shedding Program
Design Performance and Modeling Curves for
Requirements R3 Parts 3.1-3.2 and R4 Parts 4.1-4.6**

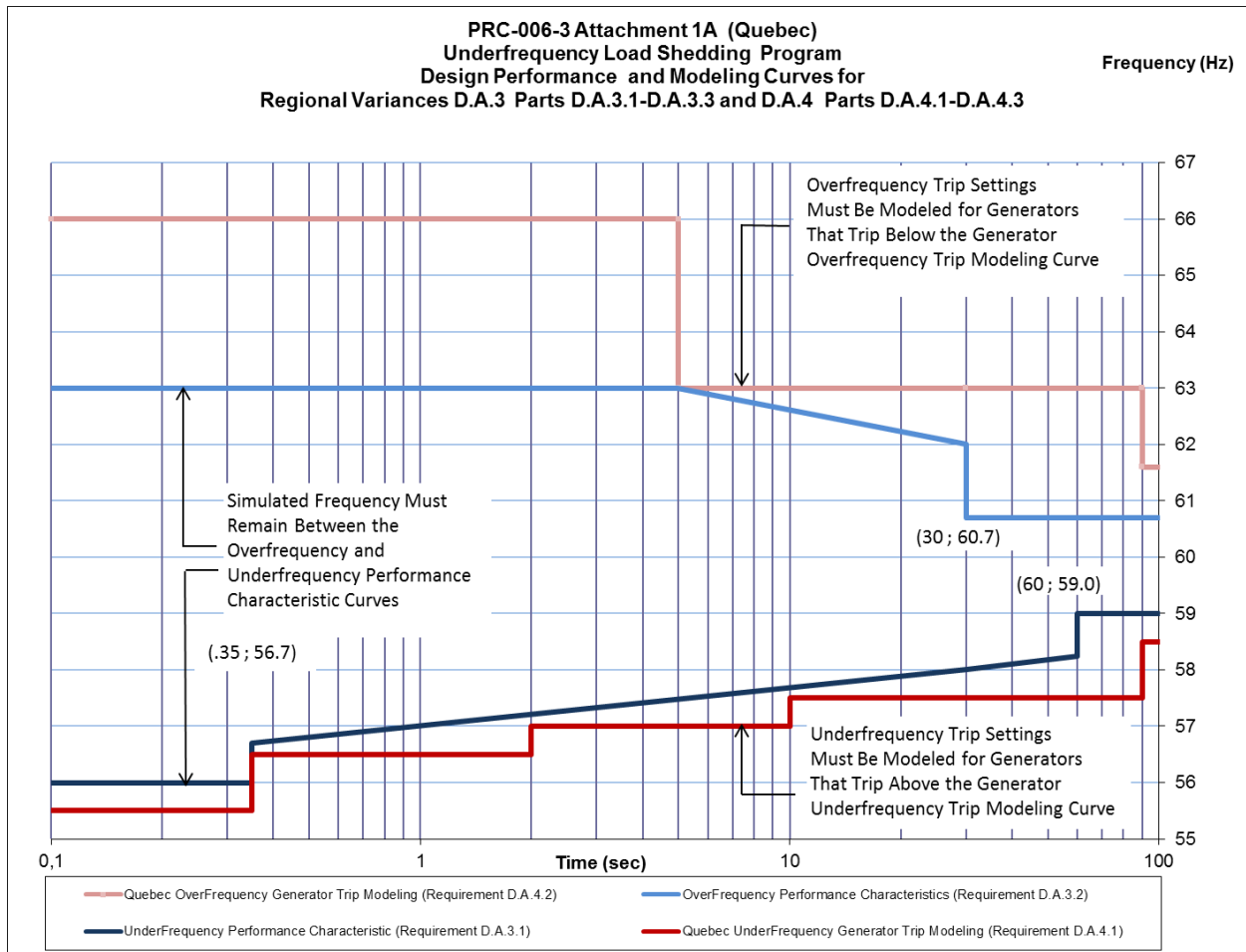


- ⚠⚠⚠⚠ Generator Overfrequency Trip Modeling (Requirement R4 Parts 4.4-4.6)
- ⚠⚠⚠⚠ Overfrequency Performance Characteristic (Requirement R3 Part 3.2)
- ⚠⚠⚠⚠ Underfrequency Performance Characteristic (Requirement R3 Part 3.1)
- ⚠⚠⚠⚠ Generator Underfrequency Trip Modeling (Requirement R4 Parts 4.1-4.3)

Curve Definitions

| Generator Overfrequency Trip Modeling | | Overfrequency Performance Characteristic | | |
|---------------------------------------|--------------------------------|--|--------------------------------|---------------|
| $t \leq 2$ s | $t > 2$ s | $t \leq 4$ s | 4 s $< t \leq 30$ s | $t > 30$ s |
| $f = 62.2$ Hz | $f = -0.686\log(t) + 62.41$ Hz | $f = 61.8$ Hz | $f = -0.686\log(t) + 62.21$ Hz | $f = 60.7$ Hz |

| Generator Underfrequency Trip Modeling | | Underfrequency Performance Characteristic | | |
|--|--|---|--|-----------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 2 \text{ s}$ | $2 \text{ s} < t \leq 60 \text{ s}$ | $t > 60 \text{ s}$ |
| $f = 57.8 \text{ Hz}$ | $f = 0.575 \log(t) + 57.63 \text{ Hz}$ | $f = 58.0 \text{ Hz}$ | $f = 0.575 \log(t) + 57.83 \text{ Hz}$ | $f = 59.3 \text{ Hz}$ |



Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R9:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a Planning Coordinator (PC) assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R10:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R15:

Requirement R15 was added in response to the directive from FERC Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. Requirement R15 addresses the FERC directive by making explicit that if deficiencies are identified as a result of an assessment, the PC shall develop a Corrective Action Plan and schedule for implementation by the UFLS entities.

A “Corrective Action Plan” is defined in the NERC Glossary of Terms as, “a list of actions and an associated timetable for implementation to remedy a specific problem.” Thus, the Corrective Action Plan developed by the PC will identify the specific timeframe for an entity to implement corrections to remedy any deficiencies identified by the PC as a result of an assessment.

A. Introduction

1. **Title:** Automatic Underfrequency Load Shedding
2. **Number:** PRC-006-~~3-4~~
3. **Purpose:** To establish design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.
4. **Applicability:**
 - 4.1. Planning Coordinators
 - 4.2. UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following:
 - 4.2.1 Transmission Owners
 - ~~4.2.2~~ ~~4.2.2~~ Distribution Providers
 - 4.2.3 UFLS-Only Distribution Providers[±]
 - 4.3. Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators.
5. **Effective Date:**

See Implementation Plan

~~This standard is effective on the first day of the first calendar quarter six months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.~~

~~6. Background:~~

~~PRC-006-2 was developed under Project 2008-02: Underfrequency Load Shedding (UFLS). The drafting team revised PRC-006-1 for the purpose of addressing the directive issued in FERC Order No. 763, *Automatic Underfrequency Load Shedding and Load Shedding Plans Reliability Standards*, 139 FERC ¶ 61,098 (2012).~~

[±]~~NERC Rules of Procedure, Appendix 5~~

~~https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC_ROP_Effective_20160504.pdf~~

B. Requirements and Measures

- R1.** Each Planning Coordinator shall develop and document criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES), including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*
- M1.** Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement R1.
- R2.** Each Planning Coordinator shall identify one or more islands to serve as a basis for designing its UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*
- 2.1.** Those islands selected by applying the criteria in Requirement R1, and
 - 2.2.** Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System, and
 - 2.3.** A single island that includes all portions of the BES in either the Regional Entity area or the Interconnection in which the Planning Coordinator's area resides. If a Planning Coordinator's area resides in multiple Regional Entity areas, each of those Regional Entity areas shall be identified as an island. Planning Coordinators may adjust island boundaries to differ from Regional Entity area boundaries by mutual consent where necessary for the sole purpose of producing contiguous regional islands more suitable for simulation.
- M2.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s) as a basis for designing a UFLS program that meet the criteria in Requirement R2, Parts 2.1 through 2.3.
- R3.** Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*
- 3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3.4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
 - 3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3.4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- 3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
- Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement R3, Parts 3.1 through 3.3.
- R4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- 4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
 - 4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
 - 4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.
 - 4.4.** Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.
 - 4.5.** Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.

- 4.6.** Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3-4 — Attachment 1.
- 4.7.** Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.
- M4.** Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement R4, Parts 4.1 through 4.7.
- R5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall coordinate its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island through one of the following: *[VRF: High][Time Horizon: Long-term Planning]*
- Develop a common UFLS program design and schedule for implementation per Requirement R3 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct a joint UFLS design assessment per Requirement R4 among the Planning Coordinators whose areas or portions of whose areas are part of the same identified island, or
 - Conduct an independent UFLS design assessment per Requirement R4 for the identified island, and in the event the UFLS design assessment fails to meet Requirement R3, identify modifications to the UFLS program(s) to meet Requirement R3 and report these modifications as recommendations to the other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island and the ERO.
- M5.** Each Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, shall have dated evidence such as joint UFLS program design documents, reports describing a joint UFLS design assessment, letters that include recommendations, or other dated documentation demonstrating that it coordinated its UFLS program design with all other Planning Coordinators whose areas or portions of whose areas are also part of the same identified island per Requirement R5.
- R6.** Each Planning Coordinator shall maintain a UFLS database containing data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. *[VRF: Lower][Time Horizon: Long-term Planning]*

- M6.** Each Planning Coordinator shall have dated evidence such as a UFLS database, data requests, data input forms, or other dated documentation to show that it maintained a UFLS database for use in event analyses and assessments of the UFLS program per Requirement R6 at least once each calendar year, with no more than 15 months between maintenance activities.
- R7.** Each Planning Coordinator shall provide its UFLS database containing data necessary to model its UFLS program to other Planning Coordinators within its Interconnection within 30 calendar days of a request. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M7.** Each Planning Coordinator shall have dated evidence such as letters, memorandums, e-mails or other dated documentation that it provided their UFLS database to other Planning Coordinators within their Interconnection within 30 calendar days of a request per Requirement R7.
- R8.** Each UFLS entity shall provide data to its Planning Coordinator(s) according to the format and schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator's UFLS database. *[VRF: Lower][Time Horizon: Long-term Planning]*
- M8.** Each UFLS Entity shall have dated evidence such as responses to data requests, spreadsheets, letters or other dated documentation that it provided data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator to support maintenance of the UFLS database per Requirement R8.
- R9.** Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. *[VRF: High][Time Horizon: Long-term Planning]*
- M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays, spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, per Requirement R9.
- R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. *[VRF: High][Time Horizon: Long-term Planning]*
- M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.

- R11.** Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*
- 11.1.** The performance of the UFLS equipment,
 - 11.2.** The effectiveness of the UFLS program.
- M11.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted an event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement R11.
- R12.** Each Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*
- M12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it conducted a UFLS design assessment per Requirements R12 and R4 if UFLS program deficiencies are identified in R11.
- R13.** Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall coordinate its event assessment (in accordance with Requirement R11) with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event through one of the following: *[VRF: Medium][Time Horizon: Operations Assessment]*
- Conduct a joint event assessment per Requirement R11 among the Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
 - Conduct an independent event assessment per Requirement R11 that reaches conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, or
 - Conduct an independent event assessment per Requirement R11 and where the assessment fails to reach conclusions and recommendations consistent with those of the event assessments of the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event, identify differences in the assessments that likely resulted in the differences in the conclusions and recommendations and report these differences to the other Planning Coordinators whose areas or portions of whose areas were included in the same islanding event and the ERO.

- M13.** Each Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall have dated evidence such as a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations, or other dated documentation demonstrating it coordinated its event assessment (per Requirement R11) with all other Planning Coordinator(s) whose areas or portions of whose areas were also included in the same islanding event per Requirement R13.
- R14.** Each Planning Coordinator shall respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes will be made or reasons why changes will not be made to the following [*VRF: Lower*][*Time Horizon: Long-term Planning*]:
- 14.1.** UFLS program, including a schedule for implementation
 - 14.2.** UFLS design assessment
 - 14.3.** Format and schedule of UFLS data submittal
- M14.** Each Planning Coordinator shall have dated evidence of responses, such as e-mails and letters, to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program per Requirement R14.
- R15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [*VRF: High*][*Time Horizon: Long-term Planning*]
- 15.1.** For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.
 - 15.2.** For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.
- M15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

Each Planning Coordinator and UFLS entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Planning Coordinator shall retain the current evidence of Requirements R1, R2, R3, R4, R5, R12, R14, and R15, Measures M1, M2, M3, M4, M5, M12, M14, and M15 as well as any evidence necessary to show compliance since the last compliance audit.
- Each Planning Coordinator shall retain the current evidence of UFLS database update in accordance with Requirement R6, Measure M6, and evidence of the prior year’s UFLS database update.
- Each Planning Coordinator shall retain evidence of any UFLS database transmittal to another Planning Coordinator since the last compliance audit in accordance with Requirement R7, Measure M7.
- Each UFLS entity shall retain evidence of UFLS data transmittal to the Planning Coordinator(s) since the last compliance audit in accordance with Requirement R8, Measure M8.
- Each UFLS entity shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R9, Measure M9, and evidence of adherence since the last compliance audit.
- Transmission Owner shall retain the current evidence of adherence with the UFLS program in accordance with Requirement R10, Measure M10, and evidence of adherence since the last compliance audit.
- Each Planning Coordinator shall retain evidence of Requirements R11, and R13, and Measures M11, and M13 for 6 calendar years.

If a Planning Coordinator or UFLS entity is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the retention period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Violation Investigation

Self-Reporting

Complaints

1.4. Additional Compliance Information

None

2. Violation Severity Levels

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|---|--|
| R1 | N/A | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas that may form islands.</p> <p>OR</p> <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> | <p>The Planning Coordinator failed to develop and document criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas and Regional Entity areas, that may form islands.</p> |
| R2 | N/A | <p>The Planning Coordinator identified an island(s) to</p> | <p>The Planning Coordinator identified an island(s) to serve</p> | <p>The Planning Coordinator identified an island(s) to serve</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|---|--|---|
| | | <p>serve as a basis for designing its UFLS program but failed to include one (1) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include two (2) of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> | <p>as a basis for designing its UFLS program but failed to include all of the Parts as specified in Requirement R2, Parts 2.1, 2.2, or 2.3.</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) to serve as a basis for designing its UFLS program.</p> |
| R3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet one (1) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet two (2) of the performance characteristic in Requirement R3, Parts 3.1, 3.2, or 3.3 in simulations of underfrequency conditions.</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area where imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s), but failed to meet all the performance characteristic in Requirement R3, Parts 3.1, 3.2, and 3.3 in simulations of underfrequency conditions.</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|---|---|---|---|
| | | | | including notification of and a schedule for implementation by UFLS entities within its area |
| R4 | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include one (1) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include two (2) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 for each island identified in Requirement R2 but the simulation failed to include three (3) of the items as specified in Requirement R4, Parts 4.1 through 4.7. | The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement R3 but simulation failed to include four (4) or more of the items as specified in Requirement R4, Parts 4.1 through 4.7. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement R3 for each island identified in Requirement R2 |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| R5 | N/A | N/A | N/A | The Planning Coordinator, whose area or portions of whose area is part of an island identified by it or another Planning Coordinator which includes multiple Planning Coordinator areas or portions of those areas, failed to coordinate its UFLS program design through one of the manners described in Requirement R5. |
| R6 | N/A | N/A | N/A | The Planning Coordinator failed to maintain a UFLS database for use in event analyses and assessments of the UFLS program at least once each calendar year, with no more than 15 months between maintenance activities. |
| R7 | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 30 calendar days and up to and including 40 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 40 calendar days but less than and including 50 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 50 calendar days but less than and including 60 calendar days following the request. | The Planning Coordinator provided its UFLS database to other Planning Coordinators more than 60 calendar days following the request. OR |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----------|--|---|---|---|
| | | | | The Planning Coordinator failed to provide its UFLS database to other Planning Coordinators. |
| R8 | The UFLS entity provided data to its Planning Coordinator(s) less than or equal to 10 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 10 calendar days but less than or equal to 15 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity provided data to its Planning Coordinator(s) but the data was not according to the format specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> | The UFLS entity provided data to its Planning Coordinator(s) more than 15 calendar days but less than or equal to 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database. | <p>The UFLS entity provided data to its Planning Coordinator(s) more than 20 calendar days following the schedule specified by the Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> <p>OR</p> <p>The UFLS entity failed to provide data to its Planning Coordinator(s) to support maintenance of each Planning Coordinator’s UFLS database.</p> |
| R9 | The UFLS entity provided less than 100% but more than (and including) 95% of automatic tripping of Load in accordance with the UFLS | The UFLS entity provided less than 95% but more than (and including) 90% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 90% but more than (and including) 85% of automatic tripping of Load in accordance with the UFLS program design | The UFLS entity provided less than 85% of automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|---|--|--|--|
| | program design and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. | including any Corrective Action Plan, as determined by the Planning Coordinator(s) area in which it owns assets. |
| R10 | The Transmission Owner provided less than 100% but more than (and including) 95% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 95% but more than (and including) 90% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 90% but more than (and including) 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. | The Transmission Owner provided less than 85% automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. |
| R11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>the UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>UFLS program, conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate one (1) of the Parts as specified in Requirement R11, Parts 11.1 or 11.2.</p> | <p>conducted and documented an assessment of the event and evaluated the parts as specified in Requirement R11, Parts 11.1 and 11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to conduct and document an assessment of the event and evaluate the Parts as specified in Requirement R11, Parts 11.1 and 11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, conducted and documented an assessment of the event within one year of event actuation but failed to evaluate all of the Parts</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | | | as specified in Requirement R11, Parts 11.1 and 11.2. |
| R12 | N/A | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than two years but less than or equal to 25 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 25 months but less than or equal to 26 months of event actuation. | The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, conducted and documented a UFLS design assessment to consider the identified deficiencies greater than 26 months of event actuation. OR The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement R11, failed to conduct and document a UFLS design assessment to consider the identified deficiencies. |
| R13 | N/A | N/A | N/A | The Planning Coordinator, in whose area a BES islanding event occurred that also included the area(s) or portions of area(s) of other Planning Coordinator(s) in the same islanding event and that resulted in system frequency excursions below the initializing set points of the UFLS |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--|--|---|
| | | | | <p>program, failed to coordinate its UFLS event assessment with all other Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event in one of the manners described in Requirement R13</p> |
| R14 | N/A | N/A | N/A | <p>The Planning Coordinator failed to respond to written comments submitted by UFLS entities and Transmission Owners within its Planning Coordinator area following a comment period and before finalizing its UFLS program, indicating in the written response to comments whether changes were made or reasons why changes were not made to the items in Parts 14.1 through 14.3.</p> |
| R15 | N/A | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> | <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement</p> |

| R # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
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| | | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.</p> | <p>R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.</p> | <p>R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area.</p> <p>OR</p> <p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p> |

D. Regional Variances

D.A. Regional Variance for the Quebec Interconnection

The following Interconnection-wide variance shall be applicable in the Quebec Interconnection and replaces, in their entirety, Requirements R3 and R4 and the violation severity levels associated with Requirements R3 and R4.

Rationale for Requirement D.A.3:

There are two modifications for requirement D.A.3 :

1. 25% Generation Deficiency : Since the Quebec Interconnection has no potential viable BES Island in underfrequency conditions, the largest generation deficiency scenarios are limited to extreme contingencies not already covered by RAS.

Based on Hydro-Québec TransÉnergie Transmission Planning requirements, the stability of the network shall be maintained for extreme contingencies using a case representing internal transfers not expected to be exceeded 25% of the time.

The Hydro-Québec TransÉnergie defense plan to cover these extreme contingencies includes two RAS (RPTC- generation rejection and remote load shedding and TDST - a centralized UVLS) and the UFLS.

2. Frequency performance curve (attachment 1A) : Specific cases where a small generation deficiency using a peak case scenario with the minimum requirement of spinning reserve can lead to an acceptable frequency deviation in the Quebec Interconnection while stabilizing between the PRC-006-2 requirement (59.3 Hz) and the UFLS anti-stall threshold (59.0 Hz).

An increase of the anti-stall threshold to 59.3 Hz would correct this situation but would cause frequent load shedding of customers without any gain of system reliability. Therefore, it is preferable to lower the steady state frequency minimum value to 59.0 Hz.

The delay in the performance characteristics curve is harmonized between D.A.3 and R.3 to 60 seconds.

Rationale for Requirements D.A.3.3. and D.A.4:

The Quebec Interconnection has its own definition of BES. In Quebec, the vast majority of BES generating plants/facilities are not directly connected to the BES. For simulations to take into account sufficient generating resources D.A.3.3 and D.A.4 need simply refer to BES generators, plants or facilities since these are listed in a Registry approved by Québec's Regulatory Body (Régie de l'Énergie).

D.A.3. Each Planning Coordinator shall develop a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, that

meets the following performance characteristics in simulations of underfrequency conditions resulting from each of these extreme events:

- Loss of the entire capability of a generating station.
- Loss of all transmission circuits emanating from a generating station, switching station, substation or dc terminal.
- Loss of all transmission circuits on a common right-of-way.
- Three-phase fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.
- Three-phase fault on a circuit breaker, with normal fault clearing.
- The operation or partial operation of a RAS for an event or condition for which it was not intended to operate.

[VRF: High][Time Horizon: Long-term Planning]

- D.A.3.1.** Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3.4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-3.4 - Attachment 1A, either for 60 seconds or until a steady-state condition between 59.0 Hz and 60.7 Hz is reached, and
- D.A.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each Quebec BES generator bus and associated generator step-up transformer high-side bus
- M.D.A.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its UFLS program, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.A.3 Parts D.A.3.1 through D.A.3.3.
- D.A.4.** Each Planning Coordinator shall conduct and document a UFLS design assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 for each island identified in Requirement

R2. The simulation shall model each of the following; [*VRF: High*][*Time Horizon: Long-term Planning*]

D.A.4.1 Underfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1A, and

D.A.4.2 Overfrequency trip settings of individual generating units that are part of Quebec BES plants/facilities that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1A, and

D.A.4.3 Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.

M.D.A.4. Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its UFLS design assessment that demonstrates it meets Requirement D.A.4 Parts D.A.4.1 through D.A.4.3.

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|------------|-----------|--|--|--|
| DA3 | N/A | <p>The Planning Coordinator developed a UFLS program, including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Parts D.A.3.1, D.A.3.2, or D.A.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator developed a UFLS program including notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Parts D.A.3.1, D.A.3.2, and D.A.3.3 in simulations of underfrequency conditions</p> <p>OR</p> <p>The Planning Coordinator failed to develop a UFLS program including notification of and a schedule for implementation by UFLS entities within its area.</p> |
| DA4 | N/A | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include one (1) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include two (2) of the items as</p> | <p>The Planning Coordinator conducted and documented a UFLS assessment at least once every five years that determined through dynamic simulation whether the UFLS program design met the performance characteristics in Requirement D.A.3 but the simulation failed to include all of the items as</p> |

| D# | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|----|-----------|---|---|--|
| | | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 or D.A.4.3. | specified in Parts D.A.4.1, D.A.4.2 and D.A.4.3. OR The Planning Coordinator failed to conduct and document a UFLS assessment at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.A.3 |

D.B. Regional Variance for the Western Electricity Coordinating Council

The following Interconnection-wide variance shall be applicable in the Western Electricity Coordinating Council (WECC) and replaces, in their entirety, Requirements R1, R2, R3, R4, R5, R11, R12, and R13.

D.B.1. Each Planning Coordinator shall participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that develops and documents criteria, including consideration of historical events and system studies, to select portions of the Bulk Electric System (BES) that may form islands. *[VRF: Medium][Time Horizon: Long-term Planning]*

M.D.B.1. Each Planning Coordinator shall have evidence such as reports, or other documentation of its criteria, developed as part of the joint regional review with other Planning Coordinators in the WECC Regional Entity area to select portions of the Bulk Electric System that may form islands including how system studies and historical events were considered to develop the criteria per Requirement D.B.1.

D.B.2. Each Planning Coordinator shall identify one or more islands from the regional review (per D.B.1) to serve as a basis for designing a region-wide coordinated UFLS program including: *[VRF: Medium][Time Horizon: Long-term Planning]*

D.B.2.1. Those islands selected by applying the criteria in Requirement D.B.1, and

D.B.2.2. Any portions of the BES designed to detach from the Interconnection (planned islands) as a result of the operation of a relay scheme or Special Protection System.

M.D.B.2. Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, or other documentation supporting its identification of an island(s), from the regional review (per D.B.1), as a basis for designing a region-wide coordinated UFLS program that meet the criteria in Requirement D.B.2 Parts D.B.2.1 and D.B.2.2.

D.B.3. Each Planning Coordinator shall adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area, that meets the following performance characteristics in simulations of underfrequency conditions resulting from an imbalance scenario, where an imbalance = $[(\text{load} - \text{actual generation output}) / (\text{load})]$, of up to 25 percent within the identified island(s). *[VRF: High][Time Horizon: Long-term Planning]*

D.B.3.1. Frequency shall remain above the Underfrequency Performance Characteristic curve in PRC-006-3-4 - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and

- D.B.3.2.** Frequency shall remain below the Overfrequency Performance Characteristic curve in PRC-006-~~3-4~~ - Attachment 1, either for 60 seconds or until a steady-state condition between 59.3 Hz and 60.7 Hz is reached, and
- D.B.3.3.** Volts per Hz (V/Hz) shall not exceed 1.18 per unit for longer than two seconds cumulatively per simulated event, and shall not exceed 1.10 per unit for longer than 45 seconds cumulatively per simulated event at each generator bus and generator step-up transformer high-side bus associated with each of the following:
 - D.B.3.3.1.** Individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES
 - D.B.3.3.2.** Generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES
 - D.B.3.3.3.** Facilities consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating.
- M.D.B.3.** Each Planning Coordinator shall have evidence such as reports, memorandums, e-mails, program plans, or other documentation of its adoption of a UFLS program, coordinated across the WECC Regional Entity area, including the notification of the UFLS entities of implementation schedule, that meet the criteria in Requirement D.B.3 Parts D.B.3.1 through D.B.3.3.
- D.B.4.** Each Planning Coordinator shall participate in and document a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2. The simulation shall model each of the following: *[VRF: High][Time Horizon: Long-term Planning]*
 - D.B.4.1.** Underfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3-4~~ - Attachment 1.
 - D.B.4.2.** Underfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-~~3-4~~ - Attachment 1.
 - D.B.4.3.** Underfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation

above 75 MVA (gross nameplate rating) that trip above the Generator Underfrequency Trip Modeling curve in PRC-006-3.4 - Attachment 1.

D.B.4.4. Overfrequency trip settings of individual generating units greater than 20 MVA (gross nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.

D.B.4.5. Overfrequency trip settings of generating plants/facilities greater than 75 MVA (gross aggregate nameplate rating) directly connected to the BES that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.

D.B.4.6. Overfrequency trip settings of any facility consisting of one or more units connected to the BES at a common bus with total generation above 75 MVA (gross nameplate rating) that trip below the Generator Overfrequency Trip Modeling curve in PRC-006-3.4 — Attachment 1.

D.B.4.7. Any automatic Load restoration that impacts frequency stabilization and operates within the duration of the simulations run for the assessment.

M.D.B.4. Each Planning Coordinator shall have dated evidence such as reports, dynamic simulation models and results, or other dated documentation of its participation in a coordinated UFLS design assessment with the other Planning Coordinators in the WECC Regional Entity area that demonstrates it meets Requirement D.B.4 Parts D.B.4.1 through D.B.4.7.

D.B.11. Each Planning Coordinator, in whose area a BES islanding event results in system frequency excursions below the initializing set points of the UFLS program, shall participate in and document a coordinated event assessment with all affected Planning Coordinators to conduct and document an assessment of the event within one year of event actuation to evaluate: *[VRF: Medium][Time Horizon: Operations Assessment]*

D.B.11.1. The performance of the UFLS equipment,

D.B.11.2 The effectiveness of the UFLS program

M.D.B.11. Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a coordinated event assessment of the performance of the UFLS equipment and the effectiveness of the UFLS program per Requirement D.B.11.

- D.B.12.** Each Planning Coordinator, in whose islanding event assessment (per D.B.11) UFLS program deficiencies are identified, shall participate in and document a coordinated UFLS design assessment of the UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies within two years of event actuation. *[VRF: Medium][Time Horizon: Operations Assessment]*
- M.D.B.12.** Each Planning Coordinator shall have dated evidence such as reports, data gathered from an historical event, or other dated documentation to show that it participated in a UFLS design assessment per Requirements D.B.12 and D.B.4 if UFLS program deficiencies are identified in D.B.11.

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-------|-----------|--|---|--|
| D.B.1 | N/A | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> <p>OR</p> <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator participated in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria but failed to include the consideration of historical events and system studies, to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas, that may form islands</p> | <p>The Planning Coordinator failed to participate in a joint regional review with the other Planning Coordinators in the WECC Regional Entity area that developed and documented criteria to select portions of the BES, including interconnected portions of the BES in adjacent Planning Coordinator areas that may form islands</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|-----------|---|--|--|
| D.B.2 | N/A | N/A | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include one (1) of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> | <p>The Planning Coordinator identified an island(s) from the regional review to serve as a basis for designing its UFLS program but failed to include all of the parts as specified in Requirement D.B.2, Parts D.B.2.1 or D.B.2.2</p> <p>OR</p> <p>The Planning Coordinator failed to identify any island(s) from the regional review to serve as a basis for designing its UFLS program.</p> |
| D.B.3 | N/A | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet one (1) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet two (2) of the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, or D.B.3.3 in simulations of underfrequency conditions</p> | <p>The Planning Coordinator adopted a UFLS program, coordinated across the WECC Regional Entity area that included notification of and a schedule for implementation by UFLS entities within its area, but failed to meet all the performance characteristic in Requirement D.B.3, Parts D.B.3.1, D.B.3.2, and D.B.3.3 in</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------------|--|--|--|--|
| | | simulations of underfrequency conditions | | simulations of underfrequency conditions OR The Planning Coordinator failed to adopt a UFLS program, coordinated across the WECC Regional Entity area, including notification of and a schedule for implementation by UFLS entities within its area. |
| D.B.4 | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include one (1) of the items as specified in Requirement | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include two (2) of the items as specified in | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include three (3) of the items as specified in | The Planning Coordinator participated in and documented a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 but the simulation failed to include four (4) or more of the items as |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|---------------|---|--|--|---|
| | D.B.4, Parts D.B.4.1 through D.B.4.7. | Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. | Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. | specified in Requirement D.B.4, Parts D.B.4.1 through D.B.4.7. OR The Planning Coordinator failed to participate in and document a coordinated UFLS assessment with the other Planning Coordinators in the WECC Regional Entity area at least once every five years that determines through dynamic simulation whether the UFLS program design meets the performance characteristics in Requirement D.B.3 for each island identified in Requirement D.B.2 |
| D.B.11 | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and | The Planning Coordinator, in whose area a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event and |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|---|---|---|--|
| | <p>same islanding event and evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than one year but less than or equal to 13 months of actuation.</p> | <p>evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 13 months but less than or equal to 14 months of actuation.</p> | <p>evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 14 months but less than or equal to 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate one (1) of the parts as specified in Requirement D.B.11, Parts D.B.11.1 or D.B.11.2.</p> | <p>evaluated the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2 within a time greater than 15 months of actuation.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, failed to participate in and document a coordinated event assessment with all Planning Coordinators whose areas or portion of whose areas were also included in the same island event and evaluate the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> <p>OR</p> <p>The Planning Coordinator, in whose area an islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, participated in and documented</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--------|-----------|---|---|--|
| | | | | <p>a coordinated event assessment with all Planning Coordinators whose areas or portions of whose areas were also included in the same islanding event within one year of event actuation but failed to evaluate all of the parts as specified in Requirement D.B.11, Parts D.B.11.1 and D.B.11.2.</p> |
| D.B.12 | N/A | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than two years but less than or equal to 25 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 25 months but less than or equal to 26 months of event actuation.</p> | <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, participated in and documented a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies in greater than 26 months of event actuation.</p> <p>OR</p> <p>The Planning Coordinator, in which UFLS program deficiencies were identified per Requirement D.B.11, failed to participate in</p> |

| D # | Lower VSL | Moderate VSL | High VSL | Severe VSL |
|-----|-----------|--------------|----------|---|
| | | | | and document a coordinated UFLS design assessment of the coordinated UFLS program with the other Planning Coordinators in the WECC Regional Entity area to consider the identified deficiencies |

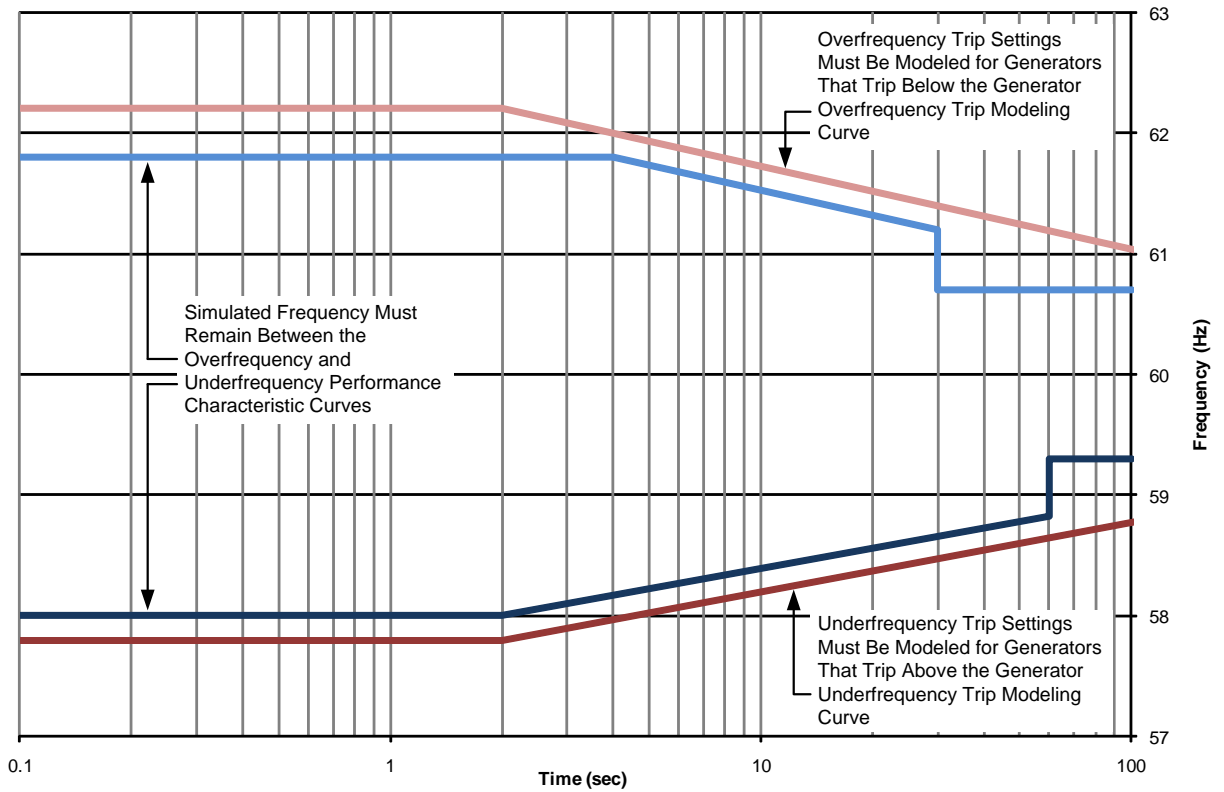
E. Associated Documents

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|---|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | May 25, 2010 | Completed revision, merging and updating PRC-006-0, PRC-007-0 and PRC-009-0. | |
| 1 | November 4, 2010 | Adopted by the Board of Trustees | |
| 1 | May 7, 2012 | FERC Order issued approving PRC-006-1 (approval becomes effective July 10, 2012) | |
| 1 | November 9, 2012 | FERC Letter Order issued accepting the modification of the VRF in R5 from (Medium to High) and the modification of the VSL language in R8. | |
| 2 | November 13, 2014 | Adopted by the Board of Trustees | Revisions made under Project 2008-02: Undervoltage Load Shedding (UVLS) & Underfrequency Load Shedding (UFLS) to address directive issued in FERC Order No. 763. Revisions to existing Requirement R9 and R10 and addition of new Requirement R15. |
| 3 | August 10, 2017 | Adopted by the NERC Board of Trustees | Revisions to the Regional Variance for the Quebec Interconnection. |
| <u>4</u> | February 6, 2020 | <u>Adopted by NERC Board of Trustees</u> | Revisions under Project 2017-07 |

PRC-006-3.4 – Attachment 1

Underfrequency Load Shedding Program
 Design Performance and Modeling Curves for
 Requirements R3 Parts 3.1-3.2 and R4 Parts 4.1-4.6



- Generator Overfrequency Trip Modeling (Requirement R4 Parts 4.4-4.6)
- Overfrequency Performance Characteristic (Requirement R3 Part 3.2)
- Underfrequency Performance Characteristic (Requirement R3 Part 3.1)
- Generator Underfrequency Trip Modeling (Requirement R4 Parts 4.1-4.3)

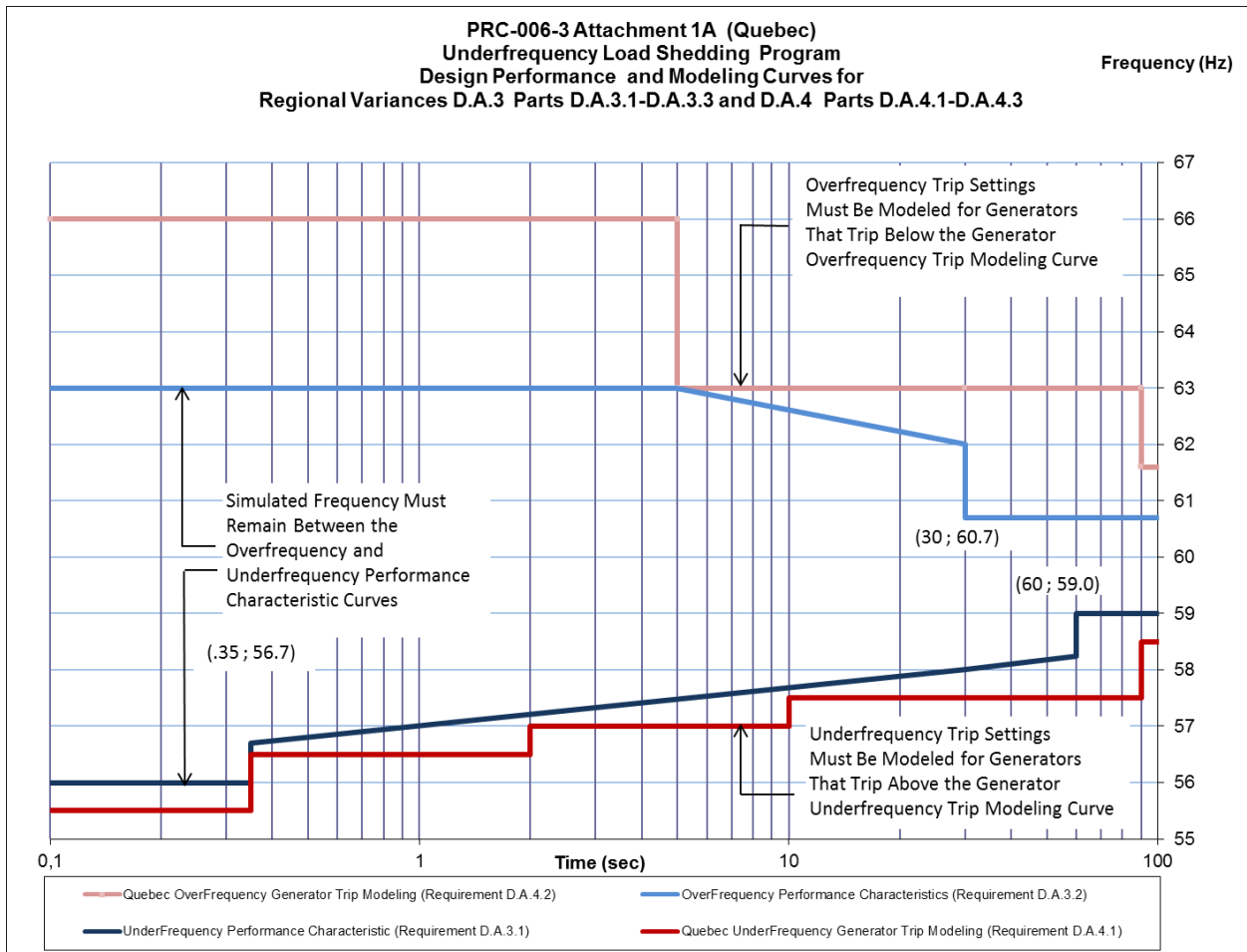
Curve Definitions

| Generator Overfrequency Trip Modeling | | Overfrequency Performance Characteristic | | |
|---------------------------------------|-------------------|--|-------------------------------------|--------------------|
| $t \leq 2 \text{ s}$ | $t > 2 \text{ s}$ | $t \leq 4 \text{ s}$ | $4 \text{ s} < t \leq 30 \text{ s}$ | $t > 30 \text{ s}$ |

Standard PRC-006-3.4 — Automatic Underfrequency Load Shedding

| | | | | |
|----------------|--------------------------------|----------------|--------------------------------|----------------|
| f = 62.2 Hz | f = -0.686log(t) + 62.41 Hz | f = 61.8 Hz | f = -0.686log(t) + 62.21 Hz | f = 60.7 Hz |
|----------------|--------------------------------|----------------|--------------------------------|----------------|

| Generator Underfrequency Trip Modeling | | Underfrequency Performance Characteristic | | |
|--|-------------------------------|---|-------------------------------|----------------|
| t ≤ 2 s | t > 2 s | t ≤ 2 s | 2 s < t ≤ 60 s | t > 60 s |
| f = 57.8 Hz | f = 0.575log(t) + 57.63 Hz | f = 58.0 Hz | f = 0.575log(t) + 57.83 Hz | f = 59.3 Hz |



Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for R9:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a Planning Coordinator (PC) assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R10:

The “Corrective Action Plan” language was added in response to the FERC directive from Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. The revised language adds clarity by requiring that each UFLS entity follow the UFLS program, including any Corrective Action Plan, developed by the PC.

Also, to achieve consistency of terminology throughout this standard, the word “application” was replaced with “implementation.” (See Requirements R3, R14 and R15)

Rationale for R15:

Requirement R15 was added in response to the directive from FERC Order No. 763, which raised concern that the standard failed to specify how soon an entity would need to implement corrections after a deficiency is identified by a PC assessment. Requirement R15 addresses the FERC directive by making explicit that if deficiencies are identified as a result of an assessment, the PC shall develop a Corrective Action Plan and schedule for implementation by the UFLS entities.

A “Corrective Action Plan” is defined in the NERC Glossary of Terms as, “a list of actions and an associated timetable for implementation to remedy a specific problem.” Thus, the Corrective Action Plan developed by the PC will identify the specific timeframe for an entity to implement corrections to remedy any deficiencies identified by the PC as a result of an assessment.

A. Introduction

1. **Title: Operational Reliability Data**
2. **Number: TOP-003-4**
3. **Purpose:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.
4. **Applicability:**
 - 4.1. Transmission Operator
 - 4.2. Balancing Authority
 - 4.3. Generator Owner
 - 4.4. Generator Operator
 - 4.5. Transmission Owner
 - 4.6. Distribution Provider
5. **Effective Date:**

See Implementation Plan.

B. Requirements and Measures

- R1. Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
 - 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data as deemed necessary by the Transmission Operator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. Each Transmission Operator shall make available its dated, current, in force documented specification for data.
- R2. Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*

- 2.1. A list of data and information needed by the Balancing Authority to support its analysis functions and Real-time monitoring.
 - 2.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 2.3. A periodicity for providing data.
 - 2.4. The deadline by which the respondent is to provide the indicated data.
- M2. Each Balancing Authority shall make available its dated, current, in force documented specification for data.
- R3. Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessment. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M3. Each Transmission Operator shall make available evidence that it has distributed its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R4. Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M4. Each Balancing Authority shall make available evidence that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, or e-mail records.
- R5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations]*
 - 5.1. A mutually agreeable format
 - 5.2. A mutually agreeable process for resolving data conflicts
 - 5.3. A mutually agreeable security protocol
- M5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall make available evidence that it has satisfied the obligations of the documented specifications. Such evidence could include, but is not

limited to, electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Process

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each responsible entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

Each Transmission Operator shall retain its dated, current, in force, documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R1 and Measurement M1 as well as any documents in force since the last compliance audit.

Each Balancing Authority shall retain its dated, current, in force, documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring in accordance with Requirement R2 and Measurement M2 as well as any documents in force since the last compliance audit.

Each Transmission Operator shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R3 and Measurement M3.

Each Balancing Authority shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring in accordance with Requirement R4 and Measurement M4.

Each Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R5 and Measurement M5.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Operations Planning | Low | The Transmission Operator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include four of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Transmission Operator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|--|---------------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R2 | Operations Planning | Low | The Balancing Authority did not include one of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include two of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include three of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include four of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. OR, The Balancing Authority did not have a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. |
| <p>For the Requirement R3 and R4 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R3 | Operations Planning | Low | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to four or more entities, or more than 15% of the entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |
| R4 | Operations Planning | Low | The Balancing Authority did not distribute its data specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to two entities, or more than 5% and less than or equal to 10% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to three entities, or more than 10% and less than or equal to 15% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to four or more entities, or more than 15% of the entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--|--------|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R5 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet one of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet two of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet three of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | August 8, 2005 | Removed "Proposed" from Effective Date | Errata |
| 1 | | Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) | Revised |
| 1 | October 17, 2008 | Adopted by NERC Board of Trustees | |
| 1 | March 17, 2011 | Order issued by FERC approving TOP-003-1 (approval effective 5/23/11) | |
| 2 | May 6, 2012 | Revised under Project 2007-03 | Revised |
| 2 | May 9, 2012 | Adopted by Board of Trustees | Revised |
| 3 | April 2014 | Changes pursuant to Project 2014-03 | Revised |
| 3 | November 13, 2014 | Adopted by Board of Trustees | Revisions under Project 2014-03 |
| 3 | November 19, 2015 | FERC approved TOP-003-3. Docket No. RM15-16-000, Order No. 817 | |
| 4 | | Adopted by Board of Trustees | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for R1:

Changes to proposed Requirement R1, Part 1.1 are in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Transmission Operator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2 is in response to NOPR paragraph 78 on relay data. The language has been moved from approved PRC-001-1.

Corresponding changes have been made to Requirement R2 for the Balancing Authority and to proposed IRO-010-2, Requirement R1 for the Reliability Coordinator.

Rationale for R5:

Proposed Requirement R5, Part 5.3 is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

A. Introduction

1. **Title: Operational Reliability Data**
2. **Number: TOP-003-4**
3. **Purpose:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.
4. **Applicability:**
 - 4.1. Transmission Operator
 - 4.2. Balancing Authority
 - 4.3. Generator Owner
 - 4.4. Generator Operator
 - 4.5. Transmission Owner
 - 4.6. Distribution Provider
5. **Effective Date:**

See Implementation Plan.

B. Requirements and Measures

- R1. Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
 - 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data as deemed necessary by the Transmission Operator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. Each Transmission Operator shall make available its dated, current, in force documented specification for data.
- R2. Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*

- 2.1. A list of data and information needed by the Balancing Authority to support its analysis functions and Real-time monitoring.
 - 2.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 2.3. A periodicity for providing data.
 - 2.4. The deadline by which the respondent is to provide the indicated data.
- M2. Each Balancing Authority shall make available its dated, current, in force documented specification for data.
- R3. Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessment. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M3. Each Transmission Operator shall make available evidence that it has distributed its data specification to entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R4. Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M4. Each Balancing Authority shall make available evidence that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, or e-mail records.
- R5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations]*
 - 5.1. A mutually agreeable format
 - 5.2. A mutually agreeable process for resolving data conflicts
 - 5.3. A mutually agreeable security protocol
- M5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall make available evidence that it has satisfied the obligations of the documented specifications. Such evidence could include, but is not

limited to, electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Process

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each responsible entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

Each Transmission Operator shall retain its dated, current, in force, documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R1 and Measurement M1 as well as any documents in force since the last compliance audit.

Each Balancing Authority shall retain its dated, current, in force, documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring in accordance with Requirement R2 and Measurement M2 as well as any documents in force since the last compliance audit.

Each Transmission Operator shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R3 and Measurement M3.

Each Balancing Authority shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring in accordance with Requirement R4 and Measurement M4.

Each Balancing Authority, Generator Owner, Generator Operator, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R5 and Measurement M5.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Operations Planning | Low | The Transmission Operator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include four of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Transmission Operator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|--|---------------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R2 | Operations Planning | Low | The Balancing Authority did not include one of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include two of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include three of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include four of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. OR, The Balancing Authority did not have a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. |
| <p>For the Requirement R3 and R4 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R3 | Operations Planning | Low | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to four or more entities, or more than 15% of the entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |
| R4 | Operations Planning | Low | The Balancing Authority did not distribute its data specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to two entities, or more than 5% and less than or equal to 10% of the entities, whichever is greater, that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to three entities, or more than 10% and less than or equal to 15% of the entities, whichever is greater, that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to four or more entities, or more than 15% of the entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--|--------|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R5 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet one of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet two of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet three of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|--|---------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | August 8, 2005 | Removed “Proposed” from Effective Date | Errata |
| 1 | | Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) | Revised |
| 1 | October 17, 2008 | Adopted by NERC Board of Trustees | |
| 1 | March 17, 2011 | Order issued by FERC approving TOP-003-1 (approval effective 5/23/11) | |
| 2 | May 6, 2012 | Revised under Project 2007-03 | Revised |
| 2 | May 9, 2012 | Adopted by Board of Trustees | Revised |
| 3 | April 2014 | Changes pursuant to Project 2014-03 | Revised |
| 3 | November 13, 2014 | Adopted by Board of Trustees | Revisions under Project 2014-03 |
| 3 | November 19, 2015 | FERC approved TOP-003-3. Docket No. RM15-16-000, Order No. 817 | |
| 4 | | Adopted by Board of Trustees | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

Rationale for R1:

Changes to proposed Requirement R1, Part 1.1 are in response to issues raised in NOPR paragraph 67 on the need for obtaining non-BES and external network data necessary for the Transmission Operator to fulfill its responsibilities.

Proposed Requirement R1, Part 1.2 is in response to NOPR paragraph 78 on relay data. The language has been moved from approved PRC-001-1.

Corresponding changes have been made to Requirement R2 for the Balancing Authority and to proposed IRO-010-2, Requirement R1 for the Reliability Coordinator.

Rationale for R5:

Proposed Requirement R5, Part 5.3 is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

A. Introduction

1. **Title: Operational Reliability Data**
2. **Number: TOP-003-~~43~~**
3. **Purpose:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.
4. **Applicability:**
 - 4.1. Transmission Operator
 - 4.2. Balancing Authority
 - 4.3. Generator Owner
 - 4.4. Generator Operator
 - ~~4.5. Load-Serving Entity~~
 - 4.6.4.5. Transmission Owner
 - 4.7.4.6. Distribution Provider
5. **Effective Date:**

See Implementation Plan.
- ~~6. **Background:**~~

~~See Project 2014-03 project page.~~

B. Requirements and Measures

- R1. Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to:
[Violation Risk Factor: Low] [Time Horizon: Operations Planning]
 - 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and external network data as deemed necessary by the Transmission Operator.
 - 1.2. Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 1.3. A periodicity for providing data.
 - 1.4. The deadline by which the respondent is to provide the indicated data.
- M1. Each Transmission Operator shall make available its dated, current, in force documented specification for data.

- R2.** Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- 2.1.** A list of data and information needed by the Balancing Authority to support its analysis functions and Real-time monitoring.
 - 2.2.** Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.
 - 2.3.** A periodicity for providing data.
 - 2.4.** The deadline by which the respondent is to provide the indicated data.
- M2.** Each Balancing Authority shall make available its dated, current, in force documented specification for data.
- R3.** Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessment. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M3.** Each Transmission Operator shall make available evidence that it has distributed its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, date and contents, or e-mail records.
- R4.** Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- M4.** Each Balancing Authority shall make available evidence that it has distributed its data specification to entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring. Such evidence could include but is not limited to web postings with an electronic notice of the posting, dated operator logs, voice recordings, postal receipts showing the recipient, or e-mail records.
- R5.** Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Same-Day Operations, Real-time Operations]*
- 5.1.** A mutually agreeable format
 - 5.2.** A mutually agreeable process for resolving data conflicts
 - 5.3.** A mutually agreeable security protocol

- M5.** Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, ~~Load-Serving Entity~~, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall make available evidence that it has satisfied the obligations of the documented specifications. Such evidence could include, but is not limited to, electronic or hard copies of data transmittals or attestations of receiving entities.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Process

As defined in the NERC Rules of Procedure, “Compliance Enforcement Authority” (CEA) means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Compliance Monitoring and Assessment Processes

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Assessment Processes” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated reliability standard.

1.3. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each responsible entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

Each Transmission Operator shall retain its dated, current, in force, documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R1 and Measurement M1 as well as any documents in force since the last compliance audit.

Each Balancing Authority shall retain its dated, current, in force, documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring in accordance with Requirement R2 and Measurement M2 as well as any documents in force since the last compliance audit.

Each Transmission Operator shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the

Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in accordance with Requirement R3 and Measurement M3.

Each Balancing Authority shall retain evidence for three calendar years that it has distributed its data specification to entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring in accordance with Requirement R4 and Measurement M4.

Each Balancing Authority, Generator Owner, Generator Operator, ~~Load Serving Entity~~, Transmission Operator, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall retain evidence for the most recent 90-calendar days that it has satisfied the obligations of the documented specifications in accordance with Requirement R5 and Measurement M5.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Table of Compliance Elements

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|---|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1 | Operations Planning | Low | The Transmission Operator did not include one of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include two of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include three of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | The Transmission Operator did not include four of the parts (Part 1.1 through Part 1.4) of the documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. OR, The Transmission Operator did not have a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|--|---------------------|-----|--|--|--|---|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R2 | Operations Planning | Low | The Balancing Authority did not include one of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include two of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include three of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. | The Balancing Authority did not include four of the parts (Part 2.1 through Part 2.4) of the documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. OR, The Balancing Authority did not have a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. |
| <p>For the Requirement R3 and R4 VSLs only, the intent of the SDT is to start with the Severe VSL first and then to work your way to the left until you find the situation that fits. In this manner, the VSL will not be discriminatory by size of entity. If a small entity has just one affected reliability entity to inform, the intent is that that situation would be a Severe violation.</p> | | | | | | |
| R3 | Operations Planning | Low | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data | The Transmission Operator did not distribute its data |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|---------------------|-----|---|---|--|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to two entities, or more than 5% and less than or equal to 10% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to three entities, or more than 10% and less than or equal to 15% of the reliability entities, whichever is greater, that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. | specification to four or more entities, or more than 15% of the entities that have data required by the Transmission Operator's Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. |
| R4 | Operations Planning | Low | The Balancing Authority did not distribute its data specification to one entity, or 5% or less of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to two entities, or more than 5% and less than or equal to 10% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to three entities, or more than 10% and less than or equal to 15% of the entities, whichever is greater, that have data required by the Balancing Authority's analysis functions and Real-time monitoring. | The Balancing Authority did not distribute its data specification to four or more entities, or more than 15% of the entities that have data required by the Balancing Authority's analysis functions and Real-time monitoring. |

| R # | Time Horizon | VRF | Violation Severity Levels | | | |
|-----|--|--------|---|---|---|--|
| | | | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R5 | Operations Planning, Same-Day Operations, Real-time Operations | Medium | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet one of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet two of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 satisfied the obligations in the data specification but did not meet three of the criteria shown in Requirement R5 (Parts 5.1 – 5.3). | The responsible entity receiving a data specification in Requirement R3 or R4 did not satisfy the obligations of the documented specifications for data. |

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

None.

Version History

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|---------------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 0 | August 8, 2005 | Removed "Proposed" from Effective Date | Errata |
| 1 | | Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) | Revised |
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| 2 | May 6, 2012 | Revised under Project 2007-03 | Revised |
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| <u>4</u> | | <u>Adopted by Board of Trustees</u> | |

Guidelines and Technical Basis

Rationale:

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT approval, the text from the rationale text boxes was moved to this section.

Rationale for Definitions:

Changes made to the proposed definitions were made in order to respond to issues raised in NOPR paragraphs 55, 73, and 74 dealing with analysis of SOLs in all time horizons, questions on Protection Systems and Special Protection Systems in NOPR paragraph 78, and recommendations on phase angles from the SW Outage Report (recommendation 27). The intent of such changes is to ensure that Real-time Assessments contain sufficient details to result in an appropriate level of situational awareness. Some examples include: 1) analyzing phase angles which may result in the implementation of an Operating Plan to adjust generation or curtail transactions so that a Transmission facility may be returned to service, or 2) evaluating the impact of a modified Contingency resulting from the status change of a Special Protection Scheme from enabled/in-service to disabled/out-of-service.

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Proposed Requirement R1, Part 1.2 is in response to NOPR paragraph 78 on relay data. The language has been moved from approved PRC-001-1.

Corresponding changes have been made to Requirement R2 for the Balancing Authority and to proposed IRO-010-2, Requirement R1 for the Reliability Coordinator.

Rationale for R5:

Proposed Requirement R5, Part 5.3 is in response to NOPR paragraph 92 where concerns were raised about data exchange through secured networks.

Implementation Plan

Project 2017-07 Standards Alignment with Registration

Applicable Standards

- FAC-002-3 – Facility Interconnection Studies
- IRO-010-3 – Reliability Coordinator Data Specification and Collection
- MOD-031-3 – Demand and Energy Data
- MOD-033-2 – Steady-State and Dynamic System Model Validation
- NUC-001-4 – Nuclear Plant Interface Coordination
- PRC-006-4 – Automatic Underfrequency Load Shedding
- TOP-003-4 – Operational Reliability Data

Requested Retirements

- FAC-002-2 – Facility Interconnection Studies
- IRO-010-2 – Reliability Coordinator Data Specification and Collection
- MOD-031-2 – Demand and Energy Data
- MOD-033-1 – Steady-State and Dynamic System Model Validation
- NUC-001-3 – Nuclear Plant Interface Coordination
- PRC-006-3 – Automatic Underfrequency Load Shedding
- TOP-003-3 – Operational Reliability Data

Applicable Entities

See subject standards.

Background

On March 19, 2015, the Federal Energy Regulatory Commission (FERC) approved the North American Electric Reliability Corporation (NERC) Risk-Based Registration (RBR) initiative in Docket No. RR15-4-000. FERC approved the removal of two functional categories, Purchasing-Selling Entity (PSE) and Interchange Authority (IA), from the NERC Compliance Registry due to the commercial nature of these categories posing little or no risk to the reliability of the bulk power system. FERC also approved the creation of a new registration category, Underfrequency Load Shedding (UFLS)-only Distribution Provider (DP), for PRC-005 and its progeny standards. FERC subsequently approved on compliance filing the removal of Load-Serving Entities (LSEs) from the NERC registry criteria.

Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration formally addressed the remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the FAC, IRO, MOD, NUC, and TOP family of standards. References to Load-Serving Entity (LSEs) were removed or replaced by the appropriate NERC Registered Entity. PRC-006 was updated to include the more-limited UFLS-only Distribution Provider (DP) to the Applicability Section. A majority of the edits simply removed deregistered functional entities and their applicable requirements/references.

Effective Date

Reliability Standards FAC-002-3, IRO-010-3, MOD-031-3, MOD-033-2, NUC-001-4, PRC-006-4, and TOP-003-4

Where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the effective date of the applicable governmental authority's order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standards FAC-002-2, IRO-010-2, MOD-031-2, MOD-033-1, NUC-001-3, PRC-006-3, and TOP-003-3

The Reliability Standard shall be retired immediately prior to the effective date of the revised standard in the particular jurisdiction in which the revised standard is becoming effective.

Implementation Plan

Project 2017-07 Standards Alignment with Registration

Applicable Standards

- FAC-002-3 – Facility Interconnection Studies
- IRO-010-3 – Reliability Coordinator Data Specification and Collection
- MOD-031-3 – Demand and Energy Data
- MOD-033-2 – Steady-State and Dynamic System Model Validation
- NUC-001-4 – Nuclear Plant Interface Coordination
- PRC-006-4 – Automatic Underfrequency Load Shedding
- TOP-003-4 – Operational Reliability Data

Requested Retirements

- FAC-002-2 – Facility Interconnection Studies
- IRO-010-2 – Reliability Coordinator Data Specification and Collection
- MOD-031-2 – Demand and Energy Data
- MOD-033-1 – Steady-State and Dynamic System Model Validation
- NUC-001-3 – Nuclear Plant Interface Coordination
- PRC-006-3 – Automatic Underfrequency Load Shedding
- TOP-003-3 – Operational Reliability Data

Applicable Entities

See subject standards.

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Several projects have addressed standards impacted by the RBR initiative since FERC approval; however, there remain some Reliability Standards that require minor revisions so that they align with the post-RBR registration impacts.

Project 2017-07 Standards Alignment with Registration formally addressed the remaining edits to the Reliability Standards that are needed to align the existing standards with the RBR initiatives. The edits include updates to the FAC, IRO, MOD, NUC, and TOP family of standards. References to Load-Serving Entity (LSEs) were removed or replaced by the appropriate NERC Registered Entity. PRC-006 was updated to ~~include replace Distribution Providers (DP) with~~ the more-limited UFLS-only [Distribution Provider \(DP\)](#) to the Applicability Section. A majority of the edits simply removed deregistered functional entities and their applicable requirements/references.

Effective Date

Reliability Standards FAC-002-3, IRO-010-3, MOD-031-3, MOD-033-2, NUC-001-4, PRC-006-4, and TOP-003-4

Where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the effective date of the applicable governmental authority's order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is three (3) months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standards FAC-002-2, IRO-010-2, MOD-031-2, MOD-033-1, NUC-001-3, PRC-006-3, and TOP-003-3

The Reliability Standard shall be retired immediately prior to the effective date of the revised standard in the particular jurisdiction in which the revised standard is becoming effective.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, FAC-002-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for FAC-002-3, Requirement R1

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R1

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R2

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R2

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R3

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R3

This justification is provided on the following page.

VRF Justification for FAC-002-3, Requirement R4

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R4

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R5

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R5

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSLs for FAC-002-3, Requirement R3

| Lower | Moderate | High | Severe |
|--|--|---|--|
| <p>The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator.</p> |

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, FAC-002-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

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- Requirements to determine equipment ratings
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- Clearer criteria for operationally critical facilities
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Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

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Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for FAC-002-3, Requirement R1

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R1

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R2

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R2

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R3

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R3

This justification is provided on the following page.

VRF Justification for FAC-002-3, Requirement R4

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R4

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VRF Justification for FAC-002-3, Requirement R5

The VRF did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSL Justification for FAC-002-3, Requirement R5

The VSL did not change from the previously FERC approved FAC-002-2 Reliability Standard.

VSLs for FAC-002-3, Requirement R3

| Lower | Moderate | High | Severe |
|--|--|---|--|
| <p>The Transmission Owner or Distribution Provider seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in one of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in two of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, coordinated and cooperated on studies with its Transmission Planner or Planning Coordinator, but failed to provide data necessary to perform studies as described in three of the Parts (R1, 1.1-1.4).</p> | <p>The Transmission Owner, or Distribution Provider Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, failed to coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator.</p> |

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, IRO-010-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

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- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
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Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
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FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

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VRF Justification for IRO-010-3, Requirement R1

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R1

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R2

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R2

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R3

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R3

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, IRO-010-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

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NERC Criteria for Violation Severity Levels

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FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

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Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for IRO-010-3, Requirement R1

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R1

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R2

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R2

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VRF Justification for IRO-010-3, Requirement R3

The VRF did not change from the previously FERC approved IRO-010-2 Reliability Standard.

VSL Justification for IRO-010-3, Requirement R3

The VSL did not change from the previously FERC approved IRO-010-2 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-031-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-031-3, Requirement R1

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R1

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R2

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R2

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R4

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R4

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-031-3. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-031-3, Requirement R1

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R1

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R2

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R2

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R3

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VRF Justification for MOD-031-3, Requirement R4

The VRF did not change from the previously FERC approved MOD-031-2 Reliability Standard.

VSL Justification for MOD-031-3, Requirement R4

The VSL did not change from the previously FERC approved MOD-031-2 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-033-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-033-2, Requirement R1

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for F MOD-033-2, Requirement R1

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VRF Justification for MOD-033-2, Requirement R2

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for MOD-033-2, Requirement R2

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, MOD-033-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for MOD-033-2, Requirement R1

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for F MOD-033-2, Requirement R1

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VRF Justification for MOD-033-2, Requirement R2

The VRF did not change from the previously FERC approved MOD-033-1 Reliability Standard.

VSL Justification for MOD-033-2, Requirement R2

The VSL did not change from the previously FERC approved MOD-033-1 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, NUC-001-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for NUC-001-4, Requirement R1

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R1

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R2

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R2

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R3

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R3

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R4

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R4

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R5

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R5

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R6

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R6

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R7

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R7

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R8

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R8

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R9

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R9

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, NUC-001-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
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- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for NUC-001-4, Requirement R1

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R1

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R2

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R2

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R3

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R3

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R4

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R4

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R5

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R5

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R6

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R6

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R7

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R7

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R8

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R8

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VRF Justification for NUC-001-4, Requirement R9

The VRF did not change from the previously FERC approved NUC-001-3 Reliability Standard.

VSL Justification for NUC-001-4, Requirement R9

The VSL did not change from the previously FERC approved NUC-001-3 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, PRC-006-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
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- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for PRC-006-4, Requirement R1

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R1

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R2

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R2

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R3

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R3

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R4

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R4

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R5

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R5

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R6

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R6

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R7

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R7

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R8

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R8

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R9

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R9

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R10

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R10

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R11

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R11

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R12

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R12

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R13

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R13

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R14

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R14

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R15

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R15

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Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

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NERC Criteria for Violation Risk Factors

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FERC Guidelines for Violation Risk Factors

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Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for PRC-006-4, Requirement R1

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R1

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R2

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R2

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R3

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R3

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R4

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R4

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R5

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R5

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R6

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R6

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R7

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R7

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R8

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R8

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R9

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R9

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R10

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R10

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R11

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R11

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R12

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R12

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R13

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R13

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R14

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R14

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VRF Justification for PRC-006-4, Requirement R15

The VRF did not change from the previously FERC approved PRC-006-3 Reliability Standard.

VSL Justification for PRC-006-4, Requirement R15

The VSL did not change from the previously FERC approved PRC-006-3 Reliability Standard.

Violation Risk Factor and Violation Severity Level Justifications

Project 2017-07 Standards Alignment with Registration

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2017-07 Standards Alignment with Registration, TOP-003-4. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

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Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for TOP-003-4, Requirement R1

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R1

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VRF Justification for TOP-003-4, Requirement R2

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VSL Justification for TOP-003-4, Requirement R2

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VRF Justification for TOP-003-4, Requirement R3

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VSL Justification for TOP-003-4, Requirement R3

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VRF Justification for TOP-003-4, Requirement R4

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VSL Justification for TOP-003-4, Requirement R4

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R5

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VSL Justification for TOP-003-4, Requirement R5

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Violation Risk Factor and Violation Severity Level Justifications

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VRF Justification for TOP-003-4, Requirement R1

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VSL Justification for TOP-003-4, Requirement R1

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R2

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R2

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R3

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R3

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R4

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R4

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VRF Justification for TOP-003-4, Requirement R5

The VRF did not change from the previously FERC approved TOP-003-3 Reliability Standard.

VSL Justification for TOP-003-4, Requirement R5

The VSL did not change from the previously FERC approved TOP-003-3 Reliability Standard.

Standards Announcement

Project 2017-07 Standards Alignment with Registration

Final Ballots Open through January 23, 2020

[Now Available](#)

Final ballots for **Project 2017-07 Standards Alignment with Registration** are open through **8 p.m. Eastern, Thursday, January 23, 2020** for the following Standards and Implementation Plan:

- FAC-002-3 – Facility Interconnection Studies
 - IRO-010-3 – Reliability Coordinator Data Specification and Collection
 - MOD-031-3 – Demand and Energy Data
 - MOD-033-2 – Steady-State and Dynamic System Model Validation
 - NUC-001-4 – Nuclear Plant Interface Coordination
 - PRC-006-4 – Automatic Underfrequency Load Shedding
 - TOP-003-4 – Operational Reliability Data
- Implementation Plan

Balloting

In the final ballot, votes are counted by exception. Votes from the previous ballot are automatically carried over in the final ballot. Only members of the applicable ballot pools can cast a vote. Ballot pool members who previously voted have the option to change their vote in the final ballot. Ballot pool members who did not cast a vote during the previous ballot can vote in the final ballot.

Members of the ballot pool(s) associated with this project can log in and submit their votes by accessing the Standards Balloting & Commenting System (SBS) [here](#). If you experience issues navigating the SBS, contact [Linda Jenkins](#).

- *If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The voting results will be posted and announced after the ballots close. If approved, the standards will be submitted to the Board of Trustees for adoption and then filed with the appropriate regulatory authorities.

Standards Development Process

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Standards Developer, [Laura Anderson](#) (via email) or at (404) 446-9671.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration FAC-002-3 FN 2 ST

Voting Start Date: 1/14/2020 9:03:32 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: ST

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 231

Total Ballot Pool: 258

Quorum: 89.53

Quorum Established Date: 1/14/2020 9:18:38 AM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 49 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 62 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 2 | 10 |
| Segment: 6 | 46 | 1 | 37 | 1 | 0 | 0 | 0 | 2 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 258 | 6.5 | 221 | 6.48 | 1 | 0.02 | 0 | 9 | 27 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-----------------|-------------------------|---------------|------------------|
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|------------------|
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | David Reinecke | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--------------------------------|-------------------|------------------|-------------|-----------|
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

Previous 1 Next

Showing 1 to 258 of 258 entries

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration IRO-010-3 FN 2 ST

Voting Start Date: 1/14/2020 9:03:48 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: ST

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 229

Total Ballot Pool: 255

Quorum: 89.8

Quorum Established Date: 1/14/2020 9:18:44 AM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 53 | 1 | 48 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 14 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 2 |
| Segment: 5 | 61 | 1 | 48 | 0.98 | 1 | 0.02 | 0 | 2 | 10 |
| Segment: 6 | 46 | 1 | 37 | 1 | 0 | 0 | 0 | 2 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 255 | 6.5 | 219 | 6.48 | 1 | 0.02 | 0 | 9 | 26 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|-------------------|-------------|-----------|
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|-----------|
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|------------------|
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirchak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric | David Reinecke | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration MOD-031-3 FN 2 ST

Voting Start Date: 1/14/2020 9:04:08 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: ST

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 229

Total Ballot Pool: 255

Quorum: 89.8

Quorum Established Date: 1/14/2020 9:19:31 AM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 53 | 1 | 48 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 60 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 1 | 9 |
| Segment: 6 | 46 | 1 | 37 | 1 | 0 | 0 | 0 | 2 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 255 | 6.5 | 220 | 6.48 | 1 | 0.02 | 0 | 8 | 26 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|-------------------|-------------|-----------|
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|-----------|
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|-----------|
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Wester Energy | Derek Brown | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric | David Reinecke | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration MOD-033-2 FN 2 ST

Voting Start Date: 1/14/2020 9:04:33 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: ST

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 228

Total Ballot Pool: 254

Quorum: 89.76

Quorum Established Date: 1/14/2020 9:18:49 AM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 53 | 1 | 48 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 60 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 1 | 9 |
| Segment: 6 | 45 | 1 | 36 | 1 | 0 | 0 | 0 | 2 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 254 | 6.5 | 219 | 6.48 | 1 | 0.02 | 0 | 8 | 26 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|-------------------|-------------|-----------|
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|-----------|
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tinchler | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|-----------|
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Wester Energy | Derek Brown | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|-------------------|-------------|-----------|
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------|-------------------------|---------------|------------------|
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | David Reinecke | | Abstain | N/A |
| 6 | Snohomish County PUD | John Liang | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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Showing 1 to 254 of 254 entries

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration NUC-001-4 FN 2 ST

Voting Start Date: 1/14/2020 9:05:06 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: ST

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 208

Total Ballot Pool: 229

Quorum: 90.83

Quorum Established Date: 1/14/2020 9:18:53 AM

Weighted Segment Value: 99.6

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 56 | 1 | 43 | 1 | 0 | 0 | 0 | 10 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 50 | 1 | 41 | 1 | 0 | 0 | 0 | 5 | 4 |
| Segment: 4 | 12 | 0.9 | 9 | 0.9 | 0 | 0 | 0 | 2 | 1 |
| Segment: 5 | 55 | 1 | 38 | 0.974 | 1 | 0.026 | 0 | 7 | 9 |
| Segment: 6 | 41 | 1 | 30 | 1 | 0 | 0 | 0 | 7 | 4 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 229 | 6.4 | 176 | 6.374 | 1 | 0.026 | 0 | 31 | 21 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Abstain | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | None | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Abstain | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Abstain | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Abstain | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |
| 1 | Western Area Power Administration | sean erickson | | Abstain | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|------------------|-------------------------|---------------|------------------|
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Abstain | N/A |
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Abstain | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Abstain | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|------------------|
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Abstain | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Abstain | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Abstain | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Abstain | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochoogor | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirchak | | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Abstain | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Abstain | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Abstain | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | David Reinecke | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | Abstain | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration PRC-006-4 FN 2 ST

Voting Start Date: 1/14/2020 9:04:50 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: ST

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 230

Total Ballot Pool: 256

Quorum: 89.84

Quorum Established Date: 1/14/2020 9:19:38 AM

Weighted Segment Value: 99.38

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 59 | 1 | 0 | 0 | 0 | 4 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 49 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 15 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 60 | 1 | 48 | 0.96 | 2 | 0.04 | 0 | 1 | 9 |
| Segment: 6 | 46 | 1 | 37 | 1 | 0 | 0 | 0 | 2 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 256 | 6.5 | 219 | 6.46 | 2 | 0.04 | 0 | 9 | 26 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-----------------|-------------------------|---------------|------------------|
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City of Poplar Bluff | Neal Williams | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|------------------|
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Negative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirchak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------|------------------|-------------|-----------|
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Salt River Project | MSWB | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | David Reinecke | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Reche Coyne | | Affirmative | N/A |

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BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration TOP-003-4 FN 2 ST

Voting Start Date: 1/14/2020 9:05:25 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: ST

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 231

Total Ballot Pool: 257

Quorum: 89.88

Quorum Established Date: 1/14/2020 9:19:43 AM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 60 | 1 | 0 | 0 | 0 | 3 | 3 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 49 | 1 | 0 | 0 | 0 | 1 | 4 |
| Segment: 4 | 14 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 2 |
| Segment: 5 | 62 | 1 | 49 | 0.98 | 1 | 0.02 | 0 | 2 | 10 |
| Segment: 6 | 46 | 1 | 37 | 1 | 0 | 0 | 0 | 2 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 257 | 6.5 | 221 | 6.48 | 1 | 0.02 | 0 | 9 | 26 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Affirmative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Affirmative | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Affirmative | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-----------------|-------------------------|---------------|------------------|
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-----------------------|-------------------------|---------------|------------------|
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Modesto Irrigation District | Spencer Tacke | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Affirmative | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|--------------------|-------------------------|---------------|------------------|
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|------------------|
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Missouri River Energy Services | Gerald Tielke | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bobby Olsen | | Affirmative | N/A |
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | David Reinecke | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | Affirmative | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--------------------------------|-------------------|------------------|-------------|-----------|
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

Previous 1 Next

Showing 1 to 257 of 257 entries

BALLOT RESULTS

Ballot Name: 2017-07 Standards Alignment with Registration Implementation Plan FN 2 OT

Voting Start Date: 1/14/2020 9:05:46 AM

Voting End Date: 1/23/2020 8:00:00 PM

Ballot Type: OT

Ballot Activity: FN

Ballot Series: 2

Total # Votes: 227

Total Ballot Pool: 256

Quorum: 88.67

Quorum Established Date: 1/14/2020 9:18:59 AM

Weighted Segment Value: 99.69

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 66 | 1 | 57 | 1 | 0 | 0 | 0 | 5 | 4 |
| Segment: 2 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Segment: 3 | 54 | 1 | 48 | 1 | 0 | 0 | 0 | 2 | 4 |
| Segment: 4 | 14 | 1 | 10 | 1 | 0 | 0 | 0 | 1 | 3 |
| Segment: 5 | 62 | 1 | 48 | 0.98 | 1 | 0.02 | 0 | 3 | 10 |
| Segment: 6 | 45 | 1 | 35 | 1 | 0 | 0 | 0 | 2 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 2 | 0.2 | 2 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| Segment: 9 | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | 0 |

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 10 | 6 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| Totals: | 256 | 6.5 | 213 | 6.48 | 1 | 0.02 | 0 | 13 | 29 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Eric Scott | | Affirmative | N/A |
| 1 | American Transmission Company, LLC | LaTroy Brumfield | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Michelle Amaranos | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Ben Engelby | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Joe Tarantino | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | None | N/A |
| 1 | Black Hills Corporation | Wes Wingen | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------|-------------------------|---------------|------------------|
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Buyce | | Affirmative | N/A |
| 1 | CMS Energy - Consumers Energy Company | Donald Lynd | | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Affirmative | N/A |
| 1 | Great Plains Energy - Kansas City Power and Light Co. | James McBee | Douglas Webb | Affirmative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro-Qu?bec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Laura Nelson | | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Stephanie Burns | Abstain | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Danny Pudenz | | Affirmative | N/A |
| 1 | Long Island Power Authority | Robert Ganley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|--------------------|-------------------------|---------------|------------------|
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | MEAG Power | David Weekley | Scott Miller | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andy Kurriger | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Nebraska Public Power District | Jamison Cawley | | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Affirmative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | OTP - Otter Tail Power Company | Charles Wicklund | | Affirmative | N/A |
| 1 | Platte River Power Authority | Matt Thompson | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Laurie Williams | | Abstain | N/A |
| 1 | Portland General Electric Co. | Angela Gaines | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Brenda Truhe | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Ginette Lacasse | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-------------------|-------------------------|---------------|------------------|
| 1 | Public Utility District No. 1 of Pend Oreille County | Kevin Conway | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Long Duong | | Affirmative | N/A |
| 1 | Puget Sound Energy, Inc. | Theresa Rakowsky | | None | N/A |
| 1 | Sacramento Municipal Utility District | Arthur Starkovich | Joe Tarantino | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Seattle City Light | Pawel Krupa | | Affirmative | N/A |
| 1 | Seminole Electric Cooperative, Inc. | Bret Galbraith | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mo Derbas | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Sunflower Electric Power Corporation | Paul Mehlhaff | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Unisource - Tucson Electric Power Co. | John Tolo | | Affirmative | N/A |
| 1 | Westar Energy | Allen Klassen | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|-------------------|-------------------------|---------------|------------------|
| 1 | Western Area Power Administration | sean erickson | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | California ISO | Jamie Johnson | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | PJM Interconnection, L.L.C. | Mark Holman | | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Vivian Moser | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Black Hills Corporation | Eric Egge | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Scott Williams | | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Lowe | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | None | N/A |
| 3 | Florida Municipal Power Agency | Dale Ray | | Affirmative | N/A |
| 3 | Georgia System Operations Corporation | Scott McGough | | Affirmative | N/A |
| 3 | Great Plains Energy - Kansas City Power and Light Co. | John Carlson | Douglas Webb | Affirmative | N/A |
| 3 | Great River Energy | Brian Glover | | Affirmative | N/A |
| 3 | Lakeland Electric | Patricia Boody | | Affirmative | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 3 | Manitoba Hydro | Karim Abdel-Hadi | | None | N/A |
| 3 | MEAG Power | Roger Brand | Scott Miller | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Affirmative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Dmitriy Bazylyuk | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|--|-----------------|-------------------------|---------------|------------------|
| 3 | Ocala Utility Services | Neville Bowen | Brandon McCormick | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | Aaron Smith | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Affirmative | N/A |
| 3 | Platte River Power Authority | Wade Kiess | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | James Meyer | | None | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Tim Womack | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Joe Tarantino | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Michael Lee | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | | Affirmative | N/A |
| 3 | Tennessee Valley Authority | Ian Grant | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Westar Energy | Bryan Taggart | Douglas Webb | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Joel Limoges | Amy Casuscelli | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Austin Energy | Jun Hua | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | None | N/A |
| 4 | Florida Municipal Power Agency | Carol Chinn | | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | Municipal Energy Agency of Nebraska | Brittany Millard | | None | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John Martinsen | | Affirmative | N/A |
| 4 | Public Utility District No. 2 of Grant County, Washington | Karla Weaver | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Beth Tincher | Joe Tarantino | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Affirmative | N/A |
| 4 | Seminole Electric Cooperative, Inc. | Jonathan Robbins | | Abstain | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | | Affirmative | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|------------------------|-------------------------|---------------|------------------|
| 5 | APS - Arizona Public Service Co. | Kelsi Rigby | | Affirmative | N/A |
| 5 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Black Hills Corporation | George Tatar | | Affirmative | N/A |
| 5 | Boise-Kuna Irrigation District - Lucky Peak Power Plant Project | Mike Kukla | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Brazos Electric Power Cooperative, Inc. | Shari Heino | | None | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | City of Independence, Power and Light Department | Jim Nail | | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | William Winters | Daniel Valle | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | Edison International - Southern California Edison Company | Neil Shockey | | Affirmative | N/A |
| 5 | Entergy | Jamie Prater | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|-----------|
| 5 | FirstEnergy - FirstEnergy Solutions | Robert Loy | | None | N/A |
| 5 | Florida Municipal Power Agency | Chris Gowder | | Affirmative | N/A |
| 5 | Great Plains Energy - Kansas City Power and Light Co. | Marcus Moor | Douglas Webb | Affirmative | N/A |
| 5 | Great River Energy | Preston Walsh | | Affirmative | N/A |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Lakeland Electric | Jim Howard | | None | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Lower Colorado River Authority | Teresa Cantwell | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Abstain | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NaturEner USA, LLC | Eric Smith | | None | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Shivaz Chopra | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | Northern California Power Agency | Marty Hostler | | Negative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|----------------|---|---------------------|-------------------------|---------------|------------------|
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Public Utility District No. 2 of Grant County, Washington | Alex Ybarra | | Affirmative | N/A |
| 5 | Puget Sound Energy, Inc. | Lynn Murphy | | None | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Joe Tarantino | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Seattle City Light | Faz Kasraie | | Affirmative | N/A |
| 5 | Seminole Electric Cooperative, Inc. | David Weber | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | William D. Shultz | | Affirmative | N/A |
| 5 | SunPower | Bradley Collard | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|-----------|
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Center | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Janet OBrien | | None | N/A |
| 5 | Westar Energy | Derek Brown | Douglas Webb | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP - AEP Marketing | Yee Chou | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Chinedu Ochonogor | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Jerry Horner | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Sandra Shaffer | | Affirmative | N/A |
| 6 | Black Hills Corporation | Eric Scherr | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | | Affirmative | N/A |
| 6 | Colorado Springs Utilities | Melissa Brown | | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Christopher Overberg | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Affirmative | N/A |
| 6 | Entergy | Julie Hall | | None | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Solutions | Ann Carey | | None | N/A |
| 6 | Florida Municipal Power Agency | Richard Montgomery | | Affirmative | N/A |
| 6 | Great Plains Energy - Kansas City Power and Light Co. | Jennifer Flandermeyer | Douglas Webb | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|-------------------|-------------|-----------|
| 6 | Great River Energy | Donna Stephenson | Michael Brytowski | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nick Burns | | Affirmative | N/A |
| 6 | NextEra Energy - Florida Power and Light Co. | Justin Welty | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joe O'Brien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | | Abstain | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Joel Robles | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Luigi Beretta | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Davis Jelusich | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Jamie Cutlip | Joe Tarantino | Affirmative | N/A |
| 6 | Salt River Project | Bob W. Olsen | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|------------------|-------------|-----------|
| 6 | Santee Cooper | Michael Brown | | Affirmative | N/A |
| 6 | Seattle City Light | Charles Freeman | | Affirmative | N/A |
| 6 | Seminole Electric Cooperative, Inc. | David Reinecke | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | | None | N/A |
| 6 | Tennessee Valley Authority | Marjorie Parsons | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | None | N/A |
| 6 | Westar Energy | Grant Wilkerson | Douglas Webb | Affirmative | N/A |
| 6 | Western Area Power Administration | Rosemary Jones | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | David Kiguel | David Kiguel | | Affirmative | N/A |
| 8 | Roger Zaklukiewicz | Roger Zaklukiewicz | | Affirmative | N/A |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald Nelson | | Affirmative | N/A |
| 10 | Midwest Reliability Organization | Russel Mountjoy | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Guy V. Zito | | Affirmative | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--------------------------------|--------------|------------------|-------------|-----------|
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |

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Exhibit F

Standard Drafting Team Roster
Project 2017-07 Standards Alignment with Registration

Project 2017-07 Standards Alignment with Registration Drafting Team Roster

| | Name | Entity |
|---------------------|--------------------------------------|---|
| Chair | Mark Atkins | AESI, Inc. |
| Vice Chair | Robert Staton | Xcel Energy |
| Members | Stephen Wendling | American Transmission Company |
| | Shannon Mickens | Southwest Power Pool |
| | Leslie Williams | ERCOT |
| | LaTroy Brumfield | American Transmission Company |
| | Matthew Harward | Southwest Power Pool |
| PMOS Liaison | Michael Brytowski | Great River Energy |
| NERC Staff | Laura Anderson – Standards Developer | North American Electric Reliability Corporation |
| | Lauren Perotti – Senior Counsel | North American Electric Reliability Corporation |