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 PROPOSED RELIABILITY STANDARDS IRO-002-5 AND TOP-001-4

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Pursuant to Section 215(d)(1) of the Federal Power Act ("FPA")[1] and Section 39.5[2] of the Federal Energy Regulatory Commission's ("FERC" or "Commission") regulations, the North American Electric Reliability Corporation ("NERC")[3] hereby submits for Commission approval proposed Reliability Standards IRO-002-5 – Reliability Coordination – Monitoring and Analysis and TOP-001-4 – Transmission Operations. The proposed Reliability Standards address the Commission directives in Order No. 817 related to: (i) Transmission Operator monitoring of non-Bulk Electric System ("BES") facilities; (ii) redundancy and diverse routing of Transmission Operator, Balancing Authority, and Reliability Coordinator data exchange capabilities; and (iii) testing of alternative or less frequently used data exchange capabilities.[4]

NERC requests that the Commission approve the proposed Reliability Standards (**Exhibit A**) as consistent with its directives in Order No. 817 and find that the proposed standards are just, reasonable, not unduly discriminatory or preferential, and in the public interest.[5] NERC also

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1 16 U.S.C. § 824o (2012).

2 18 C.F.R. § 39.5 (2016).

3 The Commission certified NERC as the electric reliability organization ("ERO") in accordance with Section 215 of the FPA on July 20, 2006. *N. Am. Elec. Reliability Corp.*, 116 FERC ¶ 61,062 (2006).

4 Order No. 817, *Transmission Operations Reliability Standards and Interconnection Reliability Operations and Coordination Reliability Standards*, 153 FERC ¶ 61,178, 80 FR 73977 (2015) ("Order No. 817").

5 Unless otherwise designated, capitalized terms shall have the meaning set forth in the *Glossary of Terms Used in NERC Reliability Standards* ("NERC Glossary of Terms"), *available at* http://www.nerc.com/files/Glossary_of_Terms.pdf.

requests that the Commission approve: (i) the associated Implementation Plan (**Exhibit B**); (ii) the associated Violation Risk Factors and Violation Severity Levels (**Exhibit E**); and (iii) the retirement of Reliability Standards TOP-001-3 and IRO-002-4.

As required by Section 39.5(a)[6] 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 meet the criteria identified by the Commission in Order No. 672[7] (**Exhibit C**), and a summary of the standard development history (**Exhibit F**). The proposed Reliability Standards were adopted by the NERC Board of Trustees on February 9, 2017.

This Petition is organized as follows: Section I of the Petition presents an executive summary of the proposed Reliability Standards. Section II of the Petition provides the individuals to whom notices and communications related to the filing should be provided. Section III provides background on the regulatory structure governing the Reliability Standards approval process. This section also provides information on the development of the proposed Reliability Standards through Project 2016-01 - Modifications to TOP and IRO Standards and the Commission's directives from Order 817. Section IV of the Petition provides a detailed discussion of the proposed Reliability Standards and explains how the proposed standards enhance reliability and address the Commission's directives from Order No. 817.

I. EXECUTIVE SUMMARY

In 2015, the Commission issued Order No. 817 approving a suite of nine revised Transmission Operations ("TOP") and Interconnection Reliability Operations and Coordination

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6 18 C.F.R. § 39.5(a) (2016).

7 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, FERC Stats. & Regs. ¶ 31,204, at P 262, 321-37, *order on reh'g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006).

("IRO") Reliability Standards. In this order, the Commission determined that the revised standards "provide a comprehensive framework as well as important improvements to ensure that the bulk electric system is operated within pre-established limits while enhancing situational awareness and strengthening operations planning" and "address the coordinated efforts to plan and reliably operate the bulk electric system under both normal and abnormal conditions."[8] Further, the Commission determined that the revised TOP and IRO standards addressed several of the Commission's reliability-related concerns and improved upon previous versions of the standards by clarifying responsibilities, eliminating gaps and ambiguities, and reducing redundancy.

Proposed Reliability Standards TOP-001-4 and IRO-002-5 build upon the improvements made in the prior versions of those standards to further advance reliability. As explained in detail in Section IV, proposed TOP-001-4 Requirement R10 has been revised to require the Transmission Operator to monitor non-BES facilities for determining System Operating Limit ("SOL") exceedances within its Transmission Operator Area, as directed by the Commission in Order No. 817.[9] This revision helps to ensure that all facilities that can adversely impact reliability are monitored.

Proposed TOP-001-4 has been further revised to require that the Transmission Operator's and Balancing Authority's data exchange capabilities for the exchange of Real-time data needed for Real-time monitoring and analysis have redundant and diversely routed data exchange infrastructure within the entity's primary Control Center and that these capabilities be tested for redundant functionality on a regular basis. Similar revisions are reflected in proposed Reliability

[8] Order No. 817 at P 14.

[9] *See* Order No. 817 at P 35.

Standard IRO-002-5 to clarify the obligations of the Reliability Coordinator. These modifications, which are responsive to the Commission's directives in Order No. 817,[10] help support reliable operations by preventing a single point of failure in primary Control Center data exchange infrastructure from halting the flow of Real-time data used by operators to monitor and control the BES.

For the reasons explained more fully in this Petition, NERC requests that the Commission approve proposed Reliability Standards TOP-001-4 and IRO-002-5 as consistent with its directives in Order No. 817 and find that the proposed standards are just, reasonable, not unduly discriminatory or preferential, and in the public interest.

[10] *See* Order No. 817 at PP 47, 51.

II. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to the following:[11]

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III. BACKGROUND

A. Regulatory Framework

By enacting the Energy Policy Act of 2005,[12] Congress entrusted the Commission with the duties of approving and enforcing rules to ensure the reliability of the Bulk Power System, 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)[13] of the FPA states that all users, owners, and operators of the Bulk Power System in the United States will be subject to Commission-approved Reliability Standards. Section 215(d)(5)[14] of the FPA authorizes the Commission to order the ERO to submit a new or modified Reliability Standard. Section 39.5(a)[15] of the Commission's regulations requires the ERO to file with the Commission for its approval each Reliability Standard that the ERO proposes should become mandatory and

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[11] 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 (2016), to allow the inclusion of more than two persons on the service list in this proceeding.

[12] 16 U.S.C. § 824o (2012).

[13] *Id.* § 824o(b)(1).

[14] *Id.* § 824o(d)(5).

[15] 18 C.F.R. § 39.5(a) (2016).

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 Bulk Power System 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 FPA[16] and Section 39.5(c)[17] 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 were developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process.[18] NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC Standard Processes Manual.[19]

In its order certifying NERC as the Commission's ERO, the Commission found that NERC's proposed rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards,[20] and thus satisfy certain of the criteria for approving Reliability Standards.[21] The development process is open to any person or entity with a legitimate interest in the reliability of the Bulk Power System.

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16 16 U.S.C. § 824o(d)(2).

17 18 C.F.R. § 39.5(c)(1).

18 Order No. 672, *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, FERC Stats. & Regs. ¶ 31,204, *order on reh'g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006).

19 The NERC Rules of Procedure are available at http://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx. The NERC Standard Processes Manual is available at http://www.nerc.com/comm/SC/Documents/Appendix_3A_StandardsProcessesManual.pdf.

20 *N. Am. Elec. Reliability Corp.*, 116 FERC ¶ 61,062 at P 250 (2006).

21 Order No. 672 at PP 268, 270.

NERC considers the comments of all stakeholders. Stakeholders must approve, and the NERC Board of Trustees must adopt, a Reliability Standard before NERC submits the Reliability Standard to the Commission for approval.

C. Order No. 817 Approving Revised TOP/IRO Reliability Standards

On November 19, 2015, the Commission issued Order No. 817 approving nine TOP and IRO Reliability Standards including TOP-001-3 – Transmission Operations and IRO-002-4 – Reliability Coordination – Monitoring and Analysis.[22] The Commission determined that the standards provided a comprehensive framework to support reliable operations and contained a number of improvements from previous versions of the standards. The Commission directed NERC to make modifications to address three reliability-related concerns. These concerns included: (i) monitoring of non-BES facilities by Transmission Operators; (ii) redundancy and diverse routing of data exchange capabilities; and (iii) testing of alternate or less frequently used data exchange capabilities. The Commission directed NERC to submit revised Reliability Standards addressing these areas within 18 months of the effective date of Order 817,[23] or by July 26, 2017. A summary of the Commission's directives is provided below.

1. Monitoring of Non-Bulk Electric System Facilities (P 35)

Reliability Standard TOP-001-3 Requirement R10 requires the Transmission Operator to monitor Facilities and the status of Special Protection Systems within its Transmission Operator Area, and to obtain and use status, voltages, and flow data for Facilities and the status of Special

[22] The other revised TOP and IRO standards approved in Order 817 are: TOP-002-4 – Operations Planning; TOP-003-3 – Operational Reliability Data; IRO-001-4 – Reliability Coordination – Responsibilities; IRO-008-2 – Reliability Coordinator Operational Analysis and Real-time Assessments; IRO-010-2 – Reliability Coordinator Data Specification and Collection; IRO-014-3 – Coordination Among Reliability Coordinators; and IRO-017-1 – Outage Coordination.

[23] Order No. 817 at P 2.

Protection Systems outside of its area, for the purpose of determining SOL exceedances within its Transmission Operator Area.

In Order No. 817, the Commission expressed concern that "in some instances the absence of real-time monitoring of non-BES facilities by the transmission operator within and outside its TOP areas as necessary for determining SOL exceedances in proposed TOP-001-3, Requirement R10 creates a reliability gap."[24] Monitoring of such facilities, the Commission explained, could protect reliability while these non-BES facilities are considered for inclusion in the BES through the BES Exception Process. Further, the Commission noted that certain non-BES facilities may not qualify as candidates for inclusion in the BES definition but should be monitored for reliability purposes because they are occasional SOL exceedance performers. The Commission therefore directed NERC to revise TOP-001-3 Requirement R10 to require real-time monitoring of non-BES facilities. The Commission suggested that to address this directive, NERC could "adopt… language similar to Reliability Standard IRO-002- 4, Requirement R3, which requires reliability coordinators to monitor non-bulk electric system facilities to the extent necessary."[25]

2. Redundancy and Diverse Routing of Data Exchange Capabilities (P 47)

Reliability Standard TOP-001-3 Requirements R19 and R20 require each Transmission Operator and Balancing Authority, respectively, to have data exchange capabilities with the entities from which it needs data in order to maintain reliability in its area. Reliability Standard IRO-002-4 Requirement R1 requires each Reliability Coordinator to have data exchange capabilities with its Balancing Authorities, Transmission Operators, and other entities it deems necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-

24 *Id*. at P 35.

25 *Id*.

time Assessments. Reliability Standards TOP-003-3 and IRO-010-2 address the operational data needed by these entities. Reliability Standard IRO-002-4 Requirement R4 requires Reliability Coordinators to have a redundant infrastructure for system monitoring.

In Order No. 817, the Commission stated that there is a reliability need for the Reliability Coordinator, Transmission Operator, and Balancing Authority to have data exchange capabilities that are redundant and diversely routed. The Commission expressed concern that the standards "do not clearly address redundancy and diverse routing so that registered entities will unambiguously recognize that they have an obligation to address redundancy and diverse routing as part of their TOP and IRO compliance obligations."[26] Stating that "redundancy for data communications is no less important than the redundancy explicitly required in the COM standards for voice communications," the Commission directed NERC to modify TOP-001-3 Requirements R19 and R20 to require that the Transmission Operator and Balancing Authority data exchange capabilities be redundant and diversely routed.[27] In addition, the Commission directed NERC to clarify that "redundant infrastructure" in IRO-002-4 Requirement R4 is equivalent to redundant and diversely routed data exchange capabilities.[28]

3. Testing of Alternate Data Exchange Capabilities (P 51)

In Order No. 817, the Commission determined that testing of the Reliability Coordinator, Transmission Operator, and Balancing Authority alternative data exchange capabilities is "important to reliability and should not be left to what may or may not be implied in the standards."[29] Therefore, the Commission directed NERC to modify the TOP and IRO standards

[26] Order No. 817 at P 47.

[27] Order No. 817 at PP 47-48.

[28] *Id.*

[29] Order No. 817 at P 51.

to address the testing of alternate or less frequently used data exchange capabilities for those data exchange capabilities used in the primary Control Centers.[30]

D. Project 2016-01, Modifications to TOP and IRO Reliability Standards

NERC initiated Project 2016-01 - Modifications to TOP and IRO Standards in January 2016 to respond to the Commission's directives in Order No. 817. Following two comment and ballot periods, the proposed standards were approved by the ballot pool on December 12, 2016. The NERC Board of Trustees adopted the proposed standards on February 9, 2017.

IV. JUSTIFICATION FOR APPROVAL

As discussed in **Exhibit C** and below, proposed Reliability Standards IRO-002-5 and TOP-001-4 satisfy the Commission's criteria in Order No. 672, address the Commission's directives from Order No. 817, and are just, reasonable, not unduly discriminatory or preferential, and in the public interest. Below is a requirement-by-requirement justification for the revisions reflected in the proposed standards and a summary of how the revisions address the Commission's directives in Order No. 817.

A. Proposed Reliability Standard TOP-001-4 Requirement R10 Addresses the Commission's Directive to Require Real-time Monitoring of Non-BES Facilities

In Order No. 817, the Commission directed NERC to revise Reliability Standard TOP-001-3 to require real-time monitoring of non-BES facilities by Transmission Operators. Proposed TOP-001-4 Requirement R10 addresses the Commission's directive by requiring each Transmission Operator to monitor non-BES facilities within its Transmission Operator Area (R 10.3), and to obtain and utilize status, voltages, and flow data for non-BES facilities outside of its Transmission Operator Area (R10.6), as necessary for determining SOL exceedances within its

[30] *Id*.

Transmission Operator Area. Consistent with the Commission's directive, the intent of proposed Reliability Standard TOP-001-4 Requirement R10 is to ensure that all facilities that can adversely impact reliability are monitored. The format of the proposed requirement has been changed from two subparts in the approved standard to six subparts in the proposed standard to indicate more clearly which monitoring activities the Transmission Operator is required to be perform.

Proposed TOP-001-4 Requirement R10 modifies approved TOP-001-3 Requirement R10 to address the Commission's directive as follows:

> R10. Each Transmission Operator shall perform the following ~~as necessary~~ for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area: [*Violation Risk Factor: High*] [*Time Horizon: Real-Time Operations*]
>
> 10.1. ~~Within its Transmission Operator Area, m~~Monitor Facilities within its Transmission Operator Area; ~~and~~
>
> 10.2 Monitor the status of ~~Special Protection Systems~~ Remedial Action Schemes within its Transmission Operator Area;
>
> 10.3 Monitor non-BES facilities within its Transmission Operator Area identified as necessary by the Transmission Operator;
>
> ~~10.2~~ 10.4 ~~Outside its Transmission Operator Area, o~~Obtain and utilize status, voltages, and flow data for Facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator~~.~~;
>
> 10.5 Obtain and utilize ~~and~~ the status of ~~Special Protection Systems~~ Remedial Action Schemes outside its Transmission Operator Area identified as necessary by the Transmission Operator; and
>
> 10.6. Obtain and utilize status, voltages, and flow data for non-BES facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator.

The non-BES facilities that the Transmission Operator is required to monitor are those that are necessary for the Transmission Operator to determine SOL exceedances within its Transmission Operator Area. The proposed Requirement corresponds to proposed Reliability Standard IRO-002-5 Requirement R5 (which maps to approved IRO-002-4 Requirement R3) which requires Reliability Coordinators to monitor non-BES facilities to the extent necessary. The proposed requirement allows Transmission Operators flexibility for identifying the non-BES facilities that should be monitored for determining SOL exceedances. Transmission Operators perform various analyses and studies that could lead to the identification such facilities. These analyses and studies include, for example, the Operational Planning Analysis required by TOP-002-4 Requirement R1, the Real-time Assessments required by TOP-001-4 Requirement R13, any analysis performed by the Transmission Operator as part of BES exception processing, and analysis which may be specified in the Reliability Coordinator's outage process that leads the Transmission Operator to identify a non-BES facility that should be monitored temporarily for determining SOL exceedances.

B. Proposed Reliability Standards TOP-001-4 Requirements R20 and R23 and IRO-002-5 Requirement R2 Address the Commission's Directive Regarding Redundancy and Diverse Routing of Data Exchange Capabilities

Proposed Reliability Standards TOP-001-4 Requirements R20 and R23 address the Commission's Order No. 817 directive to modify TOP-001-3 Requirements R19 and R20 to require that the Transmission Operator and Balancing Authority data exchange capabilities be redundant and diversely routed.[31] Proposed TOP-001-4 creates separate requirements for those data exchange capabilities that are needed to perform Operational Planning Analyses for next-day operations and those data exchange capabilities that are needed to exchange Real-time data

[31] Order No. 817 at P 47.

in order to perform Real-time monitoring and analysis. This was done to provide clarity that only the latter capabilities require redundant and diversely routed data exchange infrastructure within the primary Control Center.

Proposed TOP-001-4 modifies Reliability Standard TOP-001-3 to address the Commission's directive as follows:

> **R19.** Each Transmission Operator shall have data exchange capabilities with the entities it has identified it needs data from in order to perform its Operational Planning Analyses. ~~the entities that it has identified that it needs data from in order to maintain reliability in its Transmission Operator Area.~~ [*Violation Risk Factor: ~~High~~ Medium*] [*Time Horizon: Operations Planning~~, Same-Day Operations, Real-time Operations~~*]
>
> **R20.** Each Transmission Operator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Transmission Operator's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments. *[Violation Risk Factor: High] [Time Horizon: Same-Day Operations, Real-time Operations]*
>
> ***
>
> **R20~~2~~.** Each Balancing Authority shall have data exchange capabilities with the entities ~~that~~ it has identified ~~that~~ it needs data from in order to develop its Operating Plan for next-day operations. ~~maintain reliability in its Balancing Authority Area.~~ [*Violation Risk Factor: ~~High~~ Medium*] [*Time Horizon: Operations Planning, ~~Same-Day Operations, Real-time Operations~~*]
>
> **R23.** Each Balancing Authority shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Balancing Authority's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Transmission Operator, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and analysis functions. [*Violation Risk Factor: High*] [*Time Horizon: Same-Day Operations, Real-time Operations*]

In addition to directing requirements for the Transmission Operator and Balancing Authority, the Commission directed NERC to clarify that "redundant infrastructure" for system monitoring in Reliability Standard IRO-002-4 Requirement R4 is equivalent to redundant and diversely routed data exchange. To maintain consistency with the requirements for Transmission Operators and Balancing Authorities, the standard drafting team adopted a similar approach for clarifying the obligations of Reliability Coordinators in proposed IRO-002-5, which modifies Reliability Standard IRO-002-4 as follows:

> **R1**. Each Reliability Coordinator shall have data exchange capabilities with its Balancing Authorities and Transmission Operators, and with other entities it deems necessary, for it to perform its Operational Planning Analyses~~, Real-time monitoring, and Real-time Assessments~~. [*Violation Risk Factor: ~~High~~Medium*] [*Time Horizon: Operations Planning~~, Same-Day Operations, Real-time Operations~~*]
>
> **R2.** Each Reliability Coordinator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Reliability Coordinator's primary Control Center, for the exchange of Real-time data with its Balancing Authorities and Transmission Operators, and with other entities it deems necessary, for performing its Real-time monitoring and Real-time Assessments. [*Violation Risk Factor: High*] [*Time Horizon: Same-Day Operations, Real-time Operations*]

The proposed requirement clarifies that Reliability Coordinators shall have redundant and diversely routed data exchange capabilities and addresses the Commission's underlying concerns in Order No. 817. Therefore, NERC submits that proposed IRO-002-5 Requirement R2 represents an equally effective and efficient alternative to the Commission's directive to modify IRO-002-4 Requirement R4.

Proposed IRO-002-5 Requirement R2 and TOP-001-4 Requirements R20 and R23 require redundancy and diverse routing for the Real-time data exchange infrastructure within the applicable entity's primary Control Center. As explained in the Rationale for these

Requirements, redundant and diversely routed data exchange capabilities consist of data exchange infrastructure components that would provide continued functionality despite failure or malfunction of an individual component within the applicable entity's primary Control Center. The requirements benefit reliability by ensuring that data exchange capabilities in primary Control Centers are implemented in such a way as to preclude single points of failure from impacting the operator's ability to monitor and control the BES. The requirements allow for flexibility in how entities achieve redundancy and diverse routing, which may depend on the arrangement of the infrastructure or hardware within their primary Control Centers.

C. Proposed Reliability Standards IRO-002-5 Requirement R3 and TOP-001-4 Requirements R21 and R24 Address the Commission's Directive for Testing of Data Exchange Capabilities used in Primary Control Centers

The proposed standards address the Commission's Order No. 817 directive to address the testing of alternate or less frequently used data exchange capabilities through the addition of new requirements applicable to the Reliability Coordinator (IRO-002-5 Requirement R3), Transmission Operator (TOP-001-4 Requirement R21), and Balancing Authority (TOP-001-4 Requirement R24). The proposed new requirements read as follows:

IRO-002-5 Requirement R3:

> **R3.** Each Reliability Coordinator shall test its primary Control Center data exchange capabilities specified in Requirement R2 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Reliability Coordinator shall initiate action within two hours to restore redundant functionality. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

TOP-001-4 Requirement R21:

> **R21.** Each Transmission Operator shall test its primary Control Center data exchange capabilities specified in Requirement R20 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Transmission Operator shall initiate action within two hours to restore redundant functionality. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

TOP-001-4 Requirement 24:

> **R24.** Each Balancing Authority shall test its primary Control Center data exchange capabilities specified in Requirement R23 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Balancing Authority shall initiate action within two hours to restore redundant functionality. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

Consistent with the Commission's directive, the proposed requirements establish a "data exchange capability testing framework for the data exchange capabilities used in the primary control centers."[32] The proposed requirements require Reliability Coordinators, Transmission Operators, and Balancing Authorities to test their primary Control Center data exchange capabilities for redundant functionality. These tests must be performed at least once every 90 calendar days. Testing on a quarterly basis appropriately balances the need to test redundant functionality with the applicable entity's operating requirements.

As explained in the Rationale for each of these Requirements, a test for redundant functionality would demonstrate that data exchange capabilities would continue to operate despite the malfunction or failure of an individual component. Following an unsuccessful test, the applicable entity is required to initiate action within two hours to restore redundant functionality.

D. Replacement of Defined Term "Special Protection System" with "Remedial Action Scheme"

In addition to the revisions discussed above, the NERC Glossary term "Special Protection System" has been replaced with the NERC Glossary term "Remedial Action Scheme" throughout proposed Reliability Standards TOP-001-4 and IRO-002-5. The revised definition of

[32] Order No. 817 at P 51.

Remedial Action Scheme was approved by the Commission in 2015 in Order No. 818;[33] the Commission approved a revised definition of Special Protection System that refers the reader to the definition of Remedial Action Scheme in 2016.[34] NERC determined that using the term "Remedial Action Scheme" in the proposed standards in lieu of the term "Special Protection System" would promote consistency and clarity in terminology in the Reliability Standards.

E. Enforceability of the Proposed Reliability Standards

The proposed Reliability Standards contain Violation Risk Factors ("VRFs") and Violation Severity Levels ("VSLs"). The VSLs provide guidance on the way that NERC will enforce the Requirements of the proposed Reliability Standards. The VRFs are one of several elements used to determine an appropriate sanction when the associated Requirement is violated. The VRFs assess the impact to reliability of violating a specific Requirement. The new and revised VRFs and VSLs in the proposed standards comport with NERC and Commission guidelines related to their assignment. A description of how the proposed VRF and VSL assignments meet these guidelines is provided in **Exhibit E.**

In addition to the proposed VRFs and VSLs, the proposed Reliability Standards also include Measures that support each new and revised Requirement by clearly identifying what is required and how the Requirement will be enforced. These Measures help ensure that the Requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.[35]

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[33] Order No. 818, *Revisions to Emergency Operations Reliability Standards; Revisions to Undervoltage Load Shedding Reliability Standards; Revisions to the Definition of "Remedial Action Scheme" and Related Reliability Standards*, 153 FERC ¶ 61,228 (2015).

[34] *N. Am. Elec. Reliability Corp.*, Docket No. RD16-5-000 (Jun. 23, 2016) (delegated letter order).

[35] Order No. 672 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.").

V. EFFECTIVE DATE

NERC respectfully requests that the Commission approve the proposed Implementation Plan attached to this Petition as **Exhibit B**. NERC proposes a single plan to govern implementation of both proposed Reliability Standards IRO-002-5 and TOP-001-4. As explained therein, the implementation periods are designed to provide entities with sufficient time to meet their new obligations under the proposed standards. Under this plan, proposed Reliability Standard TOP-001-4 would become effective the first day of the first calendar quarter that is 12 months following regulatory approval. Proposed Reliability Standard IRO-002-5 would become effective the first day of the first calendar quarter that is three months following regulatory approval. The proposed implementation plan also clarifies that the initial performance of the periodic testing of primary Control Center data exchange capabilities required by proposed IRO-002-5 Requirement R3 and TOP-001-4 Requirements R21 and R24 must be completed within 90 calendar days of the effective date of the standard. Reliability Standards IRO-002-4 and TOP-001-3 would be retired immediately prior to the effective date of the successor versions.

VI. CONCLUSION

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

- proposed Reliability Standards IRO-002-5, TOP-001-4, and associated elements included in **Exhibit A**;
- the Implementation Plan included in **Exhibit B**; and
- the retirement of Commission-approved Reliability Standards IRO-002-4 and TOP-001-3.

Respectfully submitted,

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