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 SIX NERC GLOSSARY DEFINITIONS AND REQUEST FOR SHORTENED RESPONSE PERIOD AND EXPEDITED ACTION

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June 2, 2016

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Pursuant to Section 215(d)(1) of the Federal Power Act ("FPA")[1] and Section 39.5 of the regulations of the Federal Energy Regulatory Commission ("FERC" or "Commission"),[2] the North American Electric Reliability Corporation ("NERC")[3] hereby submits for Commission approval proposed definitions for the following terms in the NERC *Glossary of Terms Used in Reliability Standards* ("NERC Glossary"):

- "Reporting ACE;"
- "Actual Frequency;"
- "Actual Net Interchange;"
- "Scheduled Net Interchange (NIS);"
- "Interchange Meter Error (I_{ME});" and
- "Automatic Time Error Correction (ATEC)" (collectively, "Proposed Definitions").[4]

NERC initially filed the Proposed Definitions in Docket No. RM16-13-000, along with

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1 16 U.S.C. § 824o (2012).

2 18 C.F.R. § 39.5 (2014). While Commission regulations only require NERC to file "Reliability Standards or modifications" for Commission approval, NERC submits the proposed definitions described herein pursuant to Section 39.5, as the proposed terms are referenced in several NERC Reliability Standards.

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 Unless otherwise designated, all capitalized terms shall have the meaning set forth in the NERC Glossary, *available at* http://www.nerc.com/files/Glossary_of_Terms.pdf.

proposed Reliability Standards BAL-005-1 and FAC-001-3 ("RM16-13 Petition").[5] In the RM16-13 Petition, NERC requested, consistent with the Commission's directive in Order No. 810,[6] that the Proposed Definitions become effective upon the effective date of BAL-001-2, which is July 1, 2016.[7] As the Commission may not have time to issue an order on the entire RM16-13 Petition before July 1, 2016, NERC is filing this Petition for approval of the Proposed Definitions to allow the Commission to act independently on the Proposed Definitions in a separate docket and in an expedited timeframe. Contemporaneously with this Petition, NERC is filing a Notice of Withdrawal in Docket No. RM16-13, requesting that Commission withdraw the Proposed Definitions from consideration in that docket.

NERC requests that the Commission approve the Proposed Definitions (set forth in **Exhibit A**[8]), retirement of the existing definition of "Reporting ACE," and the associated Implementation Plan for the Proposed Definitions (set forth in **Exhibit A**) as just, reasonable, not unduly discriminatory or preferential, and in the public interest. As required by Section 39.5(a) of the Commission's regulations, the following petition is a summary of the development of the Proposed Definitions and the technical basis and purpose of the Proposed Definitions ("Petition").[9] Given the need for implementation of the Proposed Definitions as described in the

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5 *Petition of the North American Electric Reliability Corporation for Approval of Proposed Reliability Standards BAL-005-1 and FAC-001-3*, Docket No. RM16-13-000 (filed Apr. 20, 2016) ("RM16-13 Petition").

6 *Real Power Balancing Control Performance Reliability Standard*, Order No. 810, 151 FERC ¶ 61,048 at P 43 (2015).

7 *See* RM16-13 Petition, Exhibit D at 5 (Apr. 20, 2016).

8 NERC understands that the Commission will consider approval of the Implementation Plan of BAL-005-1 along with Reliability Standard BAL-005-1. As such, NERC submits the Implementation Plan for BAL-005-1 for illustration only and requests that the Commission only approve the implementation of the definitions discussed within this petition.

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

Commission's Order No. 810 before the effective date of Reliability Standard BAL-001-2, NERC respectfully requests that the Commission shorten the comment period for this petition to a period of fourteen (14) days and that the Commission consider this Petition on an expedited timeframe.

I. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to:[10]

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II. BACKGROUND

A. Regulatory Framework

By enacting the Energy Policy Act of 2005,[11] Congress entrusted the Commission with the duties of approving and enforcing rules to ensure the reliability of the Nation's Bulk-Power System, and with the duties of certifying an Electric Reliability Organization ("ERO") that would be charged with developing and enforcing mandatory Reliability Standards, subject to Commission approval. Section 215(b)(1) 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

[10] Persons to be included on the Commission's service list are identified by an asterisk.
[11] 16 U.S.C. § 824o (2012).

Reliability Standards.[12] Section 215(d)(5) of the FPA authorizes the Commission to order the ERO to submit a new or modified Reliability Standard.[13] Section 39.5(a) of the Commission's regulations requires the ERO to file with the Commission for its approval each Reliability Standard that the ERO proposes to become mandatory and enforceable in the United States, and each modification to a Reliability Standard that the ERO proposes to be made effective.[14]

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 such Reliability Standards are just, reasonable, not unduly discriminatory or preferential, and in the public interest. The Commission also exercises oversight regarding proposals to retire Reliability Standards.[15] Pursuant to Section 215(d)(2) of the FPA[16] and Section 39.5(c) of the Commission's regulations, "the Commission will give due weight to the technical expertise of the Electric Reliability Organization" with respect to the content of a Reliability Standard.[17] As NERC Glossary definitions are incorporated into NERC Reliability Standards by reference, NERC files the definition pursuant to the FPA and associated Commission regulations outlined above.

B. NERC Reliability Standards Development Procedure

The Proposed Definitions were developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process.[18] NERC develops

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12 *Id.* § 824o(b)(1).
13 *Id.* § 824o(d)(5).
14 18 C.F.R. § 39.5(a).
15 *See e.g.*, NERC *Standards Processes Manual*, at Section 4.19 of the NERC *Rules of Procedure*, *infra* n. 19.
16 16 U.S.C. § 824o(d)(2).
17 18 C.F.R. § 39.5(c)(1).
18 *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672 at P 334, FERC Stats. & Regs. ¶ 31,204, *order on reh'g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006) ("Further, in considering whether a proposed Reliability Standard meets the legal standard of review, we will entertain comments about

Reliability Standards and associated NERC Glossary definitions in accordance with Section 300 (Reliability Standards Development) and Appendix 3D (NERC Standard Processes Manual) of the Commission approved NERC Rules of Procedure.[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. NERC considers the comments of all stakeholders, and stakeholders must approve, and the NERC Board of Trustees must adopt a Reliability Standard or associated NERC Glossary definition before NERC submits the Reliability Standard to the Commission for approval.

C. Procedural History

As discussed in the RM16-13 Petition, NERC began development of Reliability Standards BAL-005-1 and FAC-001-3 and several NERC Glossary definitions in Project 2010-14.2.1 in late 2014. Prior to the initial posting for these standards and definitions, the Commission issued Order No. 810 approving Reliability Standard BAL-001-2 and, among others, the NERC Glossary definition for "Reporting ACE."[22] In Order No. 810, the

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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 FERC.").

[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] 116 FERC ¶ 61,062 at P 250.

[21] Order No. 672, *supra* n. 18, at PP 268, 270.

[22] *Real Power Balancing Control Performance Reliability Standard*, Order No. 810, 151 FERC ¶ 61,048 (2015).

Commission also directed NERC to submit a revised definition of Reporting ACE to include "the 'Lmax' upper payback limit and the bounds of that upper payback limit" prior to the implementation of BAL-001-2.[23] Pursuant to its associated implementation plan, Reliability Standard BAL-001-2 and the definition of "Reporting ACE" will go into effect on July 1, 2016.

As the term "Reporting ACE" is used in proposed Reliability Standard BAL-005-1, the standard drafting team for BAL-005-1 developed a revised definition for "Reporting ACE" and five new definitions for associated components of Reporting ACE to address the Commission's concerns and to satisfy the abovementioned Order No. 810 directive. NERC stakeholders approved proposed Reliability Standard BAL-005-1 and the associated NERC Glossary definitions after two comment and ballot periods, with a final ballot that ended on February 8, 2016. The NERC Board of Trustees approved the proposed standard and associated definitions on February 11, 2016. On April 20, 2016, NERC filed the RM16-13 Petition, seeking approval of proposed Reliability Standards BAL-005-1 and FAC-001-3, eight new and revised NERC Glossary definitions (including the Proposed Definitions), and retirement of Reliability Standard BAL-006-2.

In the RM16-13 Petition, NERC requested Commission approval of revised NERC Glossary definitions for "Reporting ACE" and each of the five components of Reporting ACE, including "Actual Frequency," "Actual Net Interchange (NI_A)," "Scheduled Net Interchange (NIS)," "Interchange Meter Error (I_{ME})," and "Automatic Time Error Correction (ATEC)." Because the currently effective definition of Reporting ACE includes several defined terms within the definition itself, NERC noted in the Petition that the proposal to separate the five elements of Reporting ACE from the

[23] *Id*. at P 43.

definition itself would "reduc[e] potential confusion associated with definitions embedded within a term."[24] Finally, NERC explained in the Petition that the revised definitions, taken together, would satisfy an outstanding Commission directive requiring NERC to "revise the definition of Reporting ACE to include the 'Lmax' upper payback limit and the bounds of that upper payback limit prior to the effective date of Reliability Standard BAL-001-1 [sic]."[25] As explained in the Implementation Plan for proposed Reliability Standard BAL-005-1, NERC requested approval of the Proposed Definitions effective immediately after the effective date of BAL-001-2.[26]

III. JUSTIFICATION FOR APPROVAL

The following is a description of each of the Proposed Definitions, as initially provided in the Docket RM16-13 Petition.

A. Reporting ACE

Reporting ACE: The scan rate values of a Balancing Authority Area's (BAA) Area Control Error (ACE) measured in MW includes the difference between the Balancing Authority Area's Actual Net Interchange and its Scheduled Net Interchange, plus its Frequency Bias Setting obligation, plus correction for any known meter error. In the Western Interconnection, Reporting ACE includes Automatic Time Error Correction (ATEC).

Reporting ACE is calculated as follows:

$$\text{Reporting ACE} = (NI_A - NI_S) - 10B\,(F_A - F_S) - I_{ME}$$

Reporting ACE is calculated in the Western Interconnection as follows:

$$\text{Reporting ACE} = (NI_A - NI_S) - 10B\,(F_A - F_S) - I_{ME} + I_{ATEC}$$

Where**:**

- NI_A = Actual Net Interchange.
- NI_S = Scheduled Net Interchange.
- B = Frequency Bias Setting.
- F_A = Actual Frequency.
- F_S = Scheduled Frequency.
- I_{ME} = Interchange Meter Error.

[24] *See* RM16-13 Petition, p. 33.
[25] *Id*.
[26] *See* RM16-13 Petition, Exhibit D at 5.

- I_{ATEC} = Automatic Time Error Correction.

All NERC Interconnections operate using the principles of Tie Line Bias (TLB) Control and require the use of an ACE equation similar to the Reporting ACE defined above. Any modification(s) to this specified Reporting ACE equation that is(are) implemented for all BAAs on an Interconnection and is(are) consistent with the following four principles of Tie Line Bias control will provide a valid alternative to this Reporting ACE equation:

1. All portions of the Interconnection are included in exactly one BAA so that the sum of all BAAs' generation, load, and loss is the same as total Interconnection generation, load, and loss;
2. The algebraic sum of all BAAs' Scheduled Net Interchange is equal to zero at all times and the sum of all BAAs' Actual Net Interchange values is equal to zero at all times;
3. The use of a common Scheduled Frequency F_S for all BAAs at all times; and,
4. Excludes metering or computational errors. (The inclusion and use of the I_{ME} term corrects for known metering or computational errors.)

The currently effective definition of Reporting ACE defines several components used to calculate Reporting ACE. The revised, proposed definition of Reporting ACE is clearer because it only includes the Reporting ACE calculation. As described below, each of the components used to calculate Reporting ACE have been separated from the definition of Reporting ACE to avoid confusion. Additionally, the revised calculation for Reporting ACE set forth above incorporates ATEC for entities in the Western Interconnection, which, as set forth below, requires that "[t]he absolute value of I_{ATEC} shall not exceed L_{max}." Accordingly, the proposed definition of Reporting ACE addresses the Commission's directive in Paragraph 43 of Order No. 810 to "revise the definition of Reporting ACE to include the 'Lmax' upper payback limit and the bounds of that upper payback limit prior to the effective date of Reliability Standard BAL-001-1."[27]

[27] *Real Power Balancing Control Performance Reliability Standard*, Order No. 810, 151 FERC ¶ 61,048 at P 43 (2015) (explaining that the Lmax upper payback limit and the bounds of that limit were necessary for the Western Interconnection).

B. Components of Reporting ACE

Actual Frequency (F_A): The Interconnection frequency measured in Hertz (Hz).

Actual Net Interchange (NI_A): The algebraic sum of actual megawatt transfers across all Tie Lines, including Pseudo-Ties, to and from all Adjacent Balancing Authority areas within the same Interconnection. Actual megawatt transfers on asynchronous DC tie lines that are directly connected to another Interconnection are excluded from Actual Net Interchange.

Scheduled Net Interchange (NIS): The algebraic sum of all scheduled megawatt transfers, including Dynamic Schedules, to and from all Adjacent Balancing Authority areas within the same Interconnection, including the effect of scheduled ramps. Scheduled megawatt transfers on asynchronous DC tie lines directly connected to another Interconnection are excluded from Scheduled Net Interchange.

Interchange Meter Error (I_{ME}): A term, normally zero, used in the Reporting ACE calculation to compensate for data or equipment errors affecting any other components of the Reporting ACE calculation.

Automatic Time Error Correction (ATEC): The addition of a component to the ACE equation for the Western Interconnection that modifies the control point for the purpose of continuously paying back Primary Inadvertent Interchange to correct accumulated time error. Automatic Time Error Correction is only applicable in the Western Interconnection.

$\mathbf{I_{ATEC}} = \frac{\mathbf{PII}_{accum}^{on/off\ peak}}{(1-Y)*H}$ when operating in Automatic Time Error Correction Mode.

The absolute value of $\mathbf{I_{ATEC}}$ shall not exceed $\mathbf{L_{max}}$.

$\mathbf{I_{ATEC}}$ shall be zero when operating in any other AGC mode.

- L_{max} is the maximum value allowed for $\mathbf{I_{ATEC}}$ set by each BA between $0.2*|B_i|$ and L_{10}, $0.2*|B_i| \leq L_{max} \leq L_{10}$.
- $\mathbf{L_{10}} = 1.65 * \varepsilon_{10} \sqrt{(-10B_i)(-10B_S)}$.
- ε_{10} is a constant derived from the targeted frequency bound. It is the targeted root-mean-square (RMS) value of ten-minute average frequency error based on frequency performance over a given year. The bound, ε_{10}, is the same for every Balancing Authority Area within an Interconnection.
- $Y = B_i / B_S$.
- H = Number of hours used to payback primary inadvertent interchange energy. The value of H is set to 3.
- $\mathbf{B_i}$ = Frequency Bias Setting for the Balancing Authority Area (MW / 0.1 Hz).
- B_S = Sum of the minimum Frequency Bias Settings for the Interconnection (MW / 0.1 Hz).
- Primary Inadvertent Interchange (PII_{hourly}) is (1-Y) * (II_{actual} - B_i * $\Delta TE/6$)

- II_{actual} is the hourly Inadvertent Interchange for the last hour. ΔTE is the hourly change in system Time Error as distributed by the Interconnection time monitor,where: $\Delta TE = TE_{end\ hour} - TE_{begin\ hour} - TD_{adj} - (t)*(TE_{offset})$
- TD_{adj} is the Reliability Coordinator adjustment for differences with Interconnection time monitor control center clocks.
- t is the number of minutes of manual Time Error Correction that occurred during the hour.
- TE_{offset} is 0.000 or +0.020 or -0.020.
- PII_{accum} is the Balancing Authority Area's accumulated PII_{hourly} in MWh. An On-Peak and Off-Peak accumulation accounting is required,

  where:

$$\mathbf{PII}_{accum}^{on/offpeak} = last\ period's\ \mathbf{PII}_{accum}^{on/offpeak} + \mathbf{PII}_{hourly}$$

As mentioned above, the components of Reporting ACE have been separated from the definition of Reporting ACE. This separation will improve reliability by reducing potential confusion associated with definitions embedded within a term. The proposed definition of ATEC also improves the current definition by addressing the Commission's directive in Order No. 810 for NERC to "revise the definition of Reporting ACE to include the 'Lmax' upper payback limit and the bounds of that upper payback limit prior to the effective date of Reliability Standard BAL-001-1."[28] The proposed definition of ATEC, which is incorporated into the proposed definition of Reporting ACE and is only applicable in the Western Interconnection, states that "[t]he absolute value of $\mathbf{I_{ATEC}}$ shall not exceed $\mathbf{L_{max}}$."

IV. REQUEST FOR EXPEDITED ACTION

As explained above, in Order No. 810, the Commission directed that the revised definition of Reporting ACE become effective prior to July 1, 2016, the implementation of Reliability Standard BAL-001-2.[29] To that end, NERC respectfully requests that the

[28] *Real Power Balancing Control Performance Reliability Standard*, Order No. 810, 151 FERC ¶ 61,048 at P 43 (2015) (explaining that the Lmax upper payback limit and the bounds of that limit were necessary for the Western Interconnection).

[29] *See*, RM16-13 Petition, Exhibit D at 5.

Commission shorten the comment period for this Petition to a period of fourteen (14) days and consider this Petition on an expedited timeframe. Accelerated action on the Proposed Definitions will ensure that the Proposed Definitions go into before the implementation of BAL-001-2, as directed by the Commission in Order No. 810.

V. EFFECTIVE DATE

NERC respectfully requests that the Commission approve the Proposed Definitions as effective as described in the Implementation Plan for BAL-005-1, attached in **Exhibit A** of this Petition. As explained in the Implementation Plan, the proposed effective date for the definitions of "Reporting ACE," "Actual Frequency," "Actual Net Interchange (NI_A)," "Scheduled Net Interchange (NI_S)," "Interchange Meter Error (I_{ME})," and "Automatic Time Error Correction (ATEC)" is "immediately after the effective date of BAL-001-2." The proposed effective date ensures that the definition of "Reporting ACE" submitted to the Commission in Docket RM14-10-1 never becomes effective.

VI. CONCLUSION

For the reasons set forth above, NERC respectfully requests that the Commission approve (i) the Proposed Definitions, (ii) retirement of the currently effective definition of the term "Reporting ACE," and (iii) the associated implementation of the Proposed Definitions as just, reasonable, not unduly discriminatory or preferential, and in the public interest.

Respectfully submitted,

/s/ Andrew C. Wills

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Counsel for the North American Electric Reliability Corporation

Date: June 2, 2016

Exhibit A

Implementation Plan for Proposed BAL-005-1

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Implementation Plan

Project 2010-14.2.1 Balancing Authority Reliability-based Controls Reliability Standard BAL-005-1

Requested Approval

- BAL-005-1 – Balancing Authority Controls

Requested Retirement

- BAL-005-0.2b – Automatic Generation Control
- BAL-006-2 – Inadvertent Interchange - Requirement R3

Prerequisite Approval

- FAC-001-3 – Facility Interconnection Requirements

Revisions to Glossary Terms

The following definitions shall become effective when BAL-005-1 becomes effective:

Actual Frequency (F_A): The Interconnection frequency measured in Hertz (Hz).

Actual Net Interchange (NI_A): The algebraic sum of actual megawatt transfers across all Tie Lines, including Pseudo-Ties, to and from all Adjacent Balancing Authority areas within the same Interconnection. Actual megawatt transfers on asynchronous DC tie lines that are directly connected to another Interconnection are excluded from Actual Net Interchange.

Scheduled Net Interchange (NI_S): The algebraic sum of all scheduled megawatt transfers, including Dynamic Schedules, to and from all Adjacent Balancing Authority areas within the same Interconnection, including the effect of scheduled ramps. Scheduled megawatt transfers on asynchronous DC tie lines directly connected to another Interconnection are excluded from Scheduled Net Interchange.

Interchange Meter Error (I_{ME}): A term used in the Reporting ACE calculation to compensate for data or equipment errors affecting any other components of the Reporting ACE calculation.

Automatic Time Error Correction (I_{ATEC}): The addition of a component to the ACE equation for the Western Interconnection that modifies the control point for the purpose of continuously paying back Primary Inadvertent Interchange to correct accumulated time error. Automatic Time Error Correction is only applicable in the Western Interconnection.

$$I_{ATEC} = \frac{PII_{accum}^{on/off\ peak}}{(1-Y)*H}$$ when operating in Automatic Time Error Correction Mode.

The absolute value of I_{ATEC} shall not exceed L_{max} .

I_{ATEC} shall be zero when operating in any other AGC mode.

- L_{max} is the maximum value allowed for I_{ATEC} set by each BA between $0.2*|B_i|$ and L_{10}, $0.2*|B_i| \leq L_{max} \leq L_{10}$.
- $L_{10} = 1.65 * \varepsilon_{10} \sqrt{(-10B_i)(-10B_S)}$.
- ε_{10} is a constant derived from the targeted frequency bound. It is the targeted root-mean-square (RMS) value of ten-minute average frequency error based on frequency performance over a given year. The bound, ε_{10}, is the same for every Balancing Authority Area within an Interconnection.
- $Y = B_i / B_S$.
- H = Number of hours used to payback primary inadvertent interchange energy. The value of H is set to 3.
- B_i = Frequency Bias Setting for the Balancing Authority Area (MW / 0.1 Hz).
- B_S = Sum of the minimum Frequency Bias Settings for the Interconnection (MW / 0.1 Hz).
- Primary Inadvertent Interchange (PII_{hourly}) is (1-Y) * (II_{actual} - B_i * ΔTE/6)
- II_{actual} is the hourly Inadvertent Interchange for the last hour.
  ΔTE is the hourly change in system Time Error as distributed by the Interconnection time monitor,where: $\Delta TE = TE_{end\ hour} - TE_{begin\ hour} - TD_{adj} - (t)*(TE_{offset})$
- TD_{adj} is the Reliability Coordinator adjustment for differences with Interconnection time monitor control center clocks.
- t is the number of minutes of manual Time Error Correction that occurred during the hour.
- TE_{offset} is 0.000 or +0.020 or -0.020.
- PII_{accum} is the Balancing Authority Area's accumulated PII_{hourly} in MWh. An On-Peak and Off-Peak accumulation accounting is required,
  where:

$$\mathbf{PII}_{accum}^{on/offpeak} = last\ period's\ \mathbf{PII}_{accum}^{on/offpeak} + \mathbf{PII}_{hourly}$$

Reporting ACE: The scan rate values of a Balancing Authority Area's (BAA) Area Control Error (ACE) measured in MW includes the difference between the Balancing Authority Area's Actual Net Interchange and its Scheduled Net Interchange, plus its Frequency Bias Setting obligation, plus correction for any known meter error. In the Western Interconnection, Reporting ACE includes Automatic Time Error Correction (ATEC).

Reporting ACE is calculated as follows:

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Where**:**

- NI_A = Actual Net Interchange.
- NI_S = Scheduled Net Interchange.
- B = Frequency Bias Setting.
- F_A = Actual Frequency.
- F_S = Scheduled Frequency.
- I_{ME} = Interchange Meter Error.
- I_{ATEC} = Automatic Time Error Correction.

All NERC Interconnections operate using the principles of Tie-line Bias (TLB) Control and require the use of an ACE equation similar to the Reporting ACE defined above. Any modification(s) to this specified Reporting ACE equation that is(are) implemented for all BAAs on an Interconnection and is(are) consistent with the following four principles of Tie Line Bias control will provide a valid alternative to this Reporting ACE equation:

1. All portions of the Interconnection are included in exactly one BAA so that the sum of all BAAs' generation, load, and loss is the same as total Interconnection generation, load, and loss;
2. The algebraic sum of all BAAs' Scheduled Net Interchange is equal to zero at all times and the sum of all BAAs' Actual Net Interchange values is equal to zero at all times;
3. The use of a common Scheduled Frequency F_S for all BAAs at all times; and,

4. Excludes metering or computational errors. (The inclusion and use of the I_{ME} term corrects for known metering or computational errors.)

Automatic Generation Control (AGC): A process designed and used to adjust a Balancing Authority Areas' Demand and resources to help maintain the Reporting ACE in that of a Balancing Authority Area within the bounds required by applicable NERC Reliability Standards.

Pseudo-Tie: A time-varying energy transfer that is updated in Real-time and included in the Actual Net Interchange term (NIA) in the same manner as a Tie Line in the affected Balancing Authorities' Reporting ACE equation (or alternate control processes).

Balancing Authority: The responsible entity that integrates resource plans ahead of time, maintains Demand and resource balance within a Balancing Authority Area, and supports Interconnection frequency in real time.

Applicable Entities

- Balancing Authority

Applicable Facilities

- N/A

Background

Reliability Standard BAL-005-1 addresses Balancing Authority Reliability-based Controls and establishes requirements for acquiring data necessary to calculate Reporting Area Control Error (Reporting ACE). Reliability Standard BAL-005-1 (Balancing Authority Controls) and associated Implementation Plan was developed in conjunction with FAC-001-3 to ensure that entities with facilities and Load operating in an Interconnection are within a Balancing Authority Area's metered boundaries. This coordination will allow for the collection of data necessary to calculate Reporting Area Control Error (Reporting ACE) to achieve the best results under BAL-005-1.

General Considerations

To guarantee proper coordination as intended by the standard drafting team for Project 2010-14.2.1, FAC-001-3 will be implemented immediately after BAL-005-1 becomes effective as reflected in the Implementation Plan for FAC-001-3, and BAL-006-2 Requirement R3 will be retired concurrently with the effective date for BAL-005-1 . Finally, to ensure proper coordination with BAL-001-2, approved by the Commission in Order No. 810 issued on April 16, 2015, the following definitions associated with BAL-005-1 will be implemented concurrently with the effective date for BAL-001-2:

- Reporting ACE
- Actual Frequency
- Actual Net Interchange
- Scheduled Net Interchange
- Interchange Meter Error
- Automatic Time Error Correction

Effective Dates

Definitions

The definitions of the following terms shall become effective immediately after the effective date of BAL-001-2[1]:

- Reporting ACE
- Actual Frequency
- Actual Net Interchange
- Scheduled Net Interchange
- Interchange Meter Error
- Automatic Time Error Correction

BAL-005-1

Where approval by an applicable governmental authority is required, BAL-005-1 and associated definitions, except the definitions enumerated in the section directly above, shall become effective on the first day of the first calendar quarter that is twelve months

[1] Because the definition of "Reporting ACE" associated with BAL-005-1 will become effective immediately after the effective date of BAL-001-2, the definition of "Reporting ACE" that was approved by the Commission on April 16, 2015 in Order No. 810 (151 FERC ¶ 61,048) will never go into effect.

after the effective date of the applicable governmental authorities order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, BAL-005-1 and associated definitions, except the definitions enumerated in the section directly above, shall become effective on the first day of the first calendar quarter that is twelve months after the date the standard is adopted by the NERC Board of Trustees', or as otherwise provided for in that jurisdiction.

Retirements

BAL-005-0.2b (Automatic Generation Control) shall be retired immediately prior to the Effective Date of BAL-005-1 (Balancing Authority Controls) in the particular jurisdiction in which the revised standard is becoming effective.

BAL-006-2 (Inadvertent Interchange) Requirement R3 shall be retired immediately prior to the Effective Date of BAL-005-1 (Balancing Authority Controls) in the particular jurisdiction in which the revised standard is becoming effective.

The existing definitions of Automatic Generation Control, Pseudo Tie and Balancing Authority shall be retired at midnight of the day immediately prior to the effective date of BAL-005-1, in the jurisdiction in which the new standard is becoming effective.

The existing definitions of Reporting ACE, Actual Frequency, Actual Net Interchange, Scheduled Net Interchange, Interchange Meter Error, and Automatic Time Error Correction shall be retired immediately after the effective date of BAL-001-2.[2]

[2] Note that the definition of Reporting ACE that was approved by the Commission in Order No. 810, which will replace the existing definition of Reporting ACE, will be retired immediately prior to the effective date for the revised definition of Reporting ACE, as described above. As such, the definition of Reporting ACE approved by the Commission in Order No. 810 will never go into effect.