A. Introduction

1. **Title:** Automatic Time Error Correction

2. **Number:** BAL-004-WECC-~~3~~4

3. **Purpose:** To maintain Western Interconnection (WI) frequency, and ~~to~~ ensure that ~~Time Error Corrections and~~time error accumulation via Primary Inadvertent Interchange (PII) payback ~~are effectively~~is conducted in a manner that does not ~~adversely affect the~~ result in a negative impact on reliability ~~of the Interconnection.~~.

4. **Applicability:**

   4.1. Functional Entities:

   4.1.1. Balancing Authorities ~~that operate~~operating synchronously ~~in~~within the ~~Western Interconnection.~~WI

5. **Effective Date:** ~~On the~~ The first day of the second quarter~~, after applicable~~ following regulatory approval ~~has been received (or the~~.

6. **Background:**

   Pre-2000 (prior to mandatory Standards), the Western Electricity Coordinating Council (WECC) operated using the Minimum Operating Reliability ~~Standard otherwise becomes~~Criteria (MORC). Per MORC Section D. Time Control, Control Areas were required to assist in maintaining frequency at or near 60.0 Hz, as prescribed in the Western System Coordinating Council (WSCC)[1] Procedure for Time Error Control (PTEC). Various versions of the PTEC predate 1980.

   In February 2003, the WECC Automatic Time Error Correction (ATEC) Procedure (Procedure) became effective ~~the first day of the fourth quarter following~~ for all Balancing Authorities in the WI. The original intent of the Procedure was to minimize the number of manual Time Error Corrections in the WI.[2]

   In June 2007, the Procedure was translated into BAL-STD-004-1, Time Error Correction, followed by BAL-004-WECC-1 through 3, Time Error Correction.[3] BAL-004-WECC-1 required Balancing Authorities within the WI to maintain Interconnection frequency within a predefined frequency profile, and to ensure that Time Error Corrections would not result in a negative impact on Interconnection reliability.

   In September 2009, in response to Federal Energy Regulatory Commission (FERC) Order 723, WECC received Standard Authorization Request (SAR) WECC-0068 requesting

[1] WECC began in 1967 as the Western Systems Coordinating Council (WSCC), a group of 40 power systems with a common goal of providing reliable power to the public whom they served. WECC was founded March 22, 1994.

[2] The Procedure provided for cost assignment and equitable payback of Inadvertent Interchange, not otherwise addressed in BAL-004-4, Time Error Correction.

[3] See Version History Table.

modification of BAL-004-WECC-1. Modifications were effective April 1, 2014, creating BAL-004-WECC-2. BAL-004-WECC-2 introduced two performance metrics: 1) in Requirement R1, a 150% metric, and 2) in Requirement R2, a 90-day metric. Neither of these metrics are supported by technical studies. They were included in BAL-004-WECC-2 as a compromise during drafting.

In May 2018, FERC approved minor revisions to BAL-004-WECC-2 as part of WECC SAR WECC-0124, effective October 1, 2018, creating BAL-004-WECC-3.[4]

In 2023, this Standard was reviewed as part of the WECC SAR WECC-0147. The drafting team noted: 1) Version 3, Requirement R5 migrated from the pre-2000 MORC without initial or subsequent technical support, and 2) R5 addresses capabilities of Automatic Generator Control (AGC) found in no other Standard, without mandating its use or stating how that capability interfaces with ATEC. R5 is retained herein until it can be properly addressed per a NERC ~~Board adoption where regulatory approval is not required).~~Standard Authorization Request.

7. Standard-Only Definition:

7.1 Interchange Software:

This Standard uses the Standard-Only term "Interchange Software" to mean:

The single electronic confirmation tool identified by the Western Electricity Coordinating Council (WECC), or its successor, to be used by all Balancing Authorities throughout the Western Interconnection (WI), that serves as the primary means for confirmation and creation of the final record of Scheduled Net Interchange (NI_S[5]) and Actual Net Interchange (NI_A[6]), during all periods when the Interchange Software is available.

7.2. ATEC:

This Standard uses the term "ATEC" as defined in the WECC Regional Definitions section of the NERC Glossary of Terms Used in Reliability Standards.

[4] FERC Docket No. RD18-2-000. Effective Date October 1, 2018.
[5] Previously called Net Scheduled Interchange
[6] Previously called Net Actual Interchange

B. Requirements and Measures

R1. Each Balancing Authority shall use the Interchange Software as the sole source of data to calculate its ATEC. [Violation Risk Factor: Severe] [Time Horizon: Operations Assessment]

M1. Each Balancing Authority will have evidence that it used the Interchange Software as the sole source of data to calculate its ATEC, as required in Requirement R1.

Evidence may include, but is not limited to production of a corporate attestation or operating procedure indicating use of the Interchange Software as the sole source for calculating ATEC.

R2. Each Balancing Authority shall operate its system such that, ~~following the conclusion of each month,~~ the month-end absolute value of its On-Peak and Off-Peak, ~~Accumulated~~accumulated Primary Inadvertent Interchange (PIIaccum), as calculated by the ~~WECC~~ Interchange ~~Tool (WIT) or its successor electronic confirmation tool~~Software, are each individually less than or equal to~~:~~ 150% of the previous calendar year's integrated hourly peak demand where peak demand is total load plus total exports. *[Violation Risk Factor Medium:] [Time Horizon: Operations Assessment]*

2.1. For ~~load-serving~~new Balancing Authorities, ~~150% of the previous calendar year's integrated hourly Peak Demand,~~the peak demand will be the maximum hourly integrated peak demand as it increases during the first year of operation.

~~**1.1** For generation-only Balancing Authorities, 150% of the previous calendar year's integrated hourly peak generation.~~

~~**M1**~~**M2.** Each Balancing Authority will have evidence that it operated its system such that~~,~~ ~~following the conclusion of each month,~~ the month-end absolute value of its On-Peak and Off-Peak, ~~Accumulated~~accumulated Primary Inadvertent Interchange (PIIaccum), as calculated by the ~~WECC~~ Interchange ~~Tool (WIT)~~Software, are each individually less than or ~~its successor electronic confirmation tool, meets all criteria stated~~equal to 150% of the previous calendar year's integrated hourly peak demand where peak demand is total load plus total exports, average load in those hours, as calculated by the Interchange Software, per Requirement ~~R1~~R2, or per the exception allowed in R2.1.

~~**R2**~~**R3.** Each Balancing Authority shall, upon discovery of an error in ~~the~~its On-Peak or Off-Peak Inadvertent Interchange calculation ~~of PII_{hourly}~~, recalculate and correct the Inadvertent Interchange values within 90 days~~, the value of PII_{hourly} and adjust the PII_{accum}~~ from the time ~~of~~ the error~~.~~ is discovered. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

~~**M2**. Forms of acceptable~~**M3.** Each Balancing Authority discovering an error in its On-Peak or Off-Peak Inadvertent Interchange calculation will have evidence ~~of compliance with~~that it recalculated and corrected the Inadvertent Interchange values, within 90 days from the time the error is discovered, as required in Requirement ~~R2~~R3.

Evidence may include, but ~~are~~is not limited to ~~any one of the following~~:

- ~~Data, screen~~Screen shots from the ~~WECC~~ Interchange ~~Tool (WIT) or its successor electronic confirmation tool,~~Software;
- ~~Data, screen~~Screen shots from the Balancing Authority's internal ~~Balancing Authority tool, or~~
- ~~Production of data from any other~~software functions such as internal databases, spreadsheets, and displays~~.~~;

- ~~**R3**~~Dated archive files; and
- Historic data.

R4. Each Balancing Authority shall keep ~~its Automatic Time Error Correction (ATEC)~~ATEC in service, with an allowable exception period of less than or equal to an accumulated 24 hours per calendar quarter for ATEC to be out of service. This period is separate from any period during which the Interchange Software was unavailable. *[Violation Risk Factor: Medium] [Time Horizon: Same-day Operations]*

~~**M3. Forms of acceptable**~~**M4.** Each Balancing Authority will have evidence ~~of compliance with~~that it kept ATEC in service as required in Requirement ~~R3~~R4, subject to the allowable exceptions provided.

Evidence may include, but ~~are~~is not limited to:

- ~~Dated archived files,~~
- ~~Historical data,~~
- ~~Other data that demonstrates the ATEC was out of service for less than 24 hours per calendar quarter.~~

~~**R4.** Each Balancing Authority shall compute each of the following using the WECC Interchange Tool (WIT) or its successor electronic confirmation tool, no later than 50 minutes after each hour,~~

~~**4.1.** PII_{hourly};~~

~~**4.2.** PII_{accum};~~

~~***4.3.*** Automatic Time Error Correction term (I_{ATEC}).~~

~~*[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*~~

~~**M4.** Forms of acceptable evidence of compliance with Requirement R4 include but are not limited to any one of the following:~~

- ~~Data, screen shots from the WECC Interchange Tool (WIT) or its successor electronic confirmation tool, that demonstrate compliance;~~
- ~~Data, screen~~Screen shots from the Interchange Software;
- Screen shots from ~~internal~~the Balancing ~~Authority tool that demonstrate~~

~~compliance; or,~~

- ~~Data from any other~~Authority's internal software functions such as internal databases, spreadsheets, and displays ~~that demonstrate compliance.~~;

- Dated archive files; and

- Historical data.

R5. Each Balancing Authority shall be able to change its Automatic Generation Control (AGC) operating mode ~~between Flat Frequency (for blackout restoration); Flat Tie-Line (for loss of frequency telemetry); Tie Line Bias; and Tie Line Bias plus Time Error Control (used in ATEC mode),~~ to correspond to current operating conditions. *[Violation Risk Factor: Medium] [Time Horizon: Real-Time Operations]*

M5. ~~Forms of acceptable~~Each Balancing Authority will have evidence ~~of compliance with Requirement~~that its AGC is able to change operating modes to correspond to current operating conditions, as required in R5.

Evidence may include, but ~~are~~is not limited to ~~any one of the following:~~:

- Screen shots from Energy Management System~~,~~; and

- Demonstration using an off-line system.

R6. Each Balancing Authority shall ~~recalculate the PII~~hourly ~~and PII~~accum ~~for the On-Peak and Off-Peak periods whenever adjustments are made to~~ upload hourly ~~Inadvertent~~Actual Net Interchange ~~or ΔTE~~(NI_A) to the Interchange Software no later than 50 minutes after each hour. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M6. ~~Forms of acceptable~~Each Balancing Authority will have evidence ~~of compliance with~~that it uploaded hourly Actual Net Interchange (NI_A) to the Interchange Software no later than 50 minutes after each hour, as required in Requirement R6.

Evidence may include, but ~~are~~is not limited to ~~any one of the following~~:

- ~~Data, screen~~Screen shots from the Interchange Software;

  - ~~Screen~~ shots from the ~~WECC Interchange Tool (WIT) or its successor electronic confirmation tool, that demonstrate compliance;~~

  - ~~Data, screen shots from an~~Balancing Authority's internal ~~Balancing Authority tool that demonstrate compliance with; or,~~

- ~~Data from any other~~ software functions such as internal databases, spreadsheets, and displays ~~that demonstrate compliance.~~;

- Dated archive files; and

- Historical data.

R7. Each Balancing Authority ~~shall make the same adjustment to the PII~~accum as it did for ~~any~~making a month-end ~~meter reading adjustments to Inadvertent~~adjustment shall input that value as part of its Actual Net Interchange~~.~~ (NI_A). *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M7. ~~Forms of acceptable~~ Each Balancing Authority making a month-end adjustment will have evidence ~~of compliance with~~that it input that value as part of its Actual Net Interchange (NI_A), as required in Requirement R7 ~~include but are not limited to any one of the following:~~.

- ~~Data, screen shots from the WECC Interchange Tool (WIT) or its successor electronic confirmation tool, that demonstrate compliance;~~
- ~~Data, screen shots from an internal Balancing Authority tool that demonstrate compliance; or,~~
- ~~Production of data from any other databases, spreadsheets, displays that demonstrate compliance.~~

R8. Each Balancing Authority making a month-end adjustment shall ~~payback~~ensure that value is added to its accumulated Primary Inadvertent Interchange ~~using ATEC rather than bilateral and unilateral payback~~. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M8.

~~**M8.**~~ ~~Forms of acceptable~~Each Balancing Authority making a month-end adjustment will have evidence ~~of compliance with Requirement R8 include but are not limited~~that the value was added to ~~historical On-Peak and Off-Peak~~its accumulated Primary Inadvertent Interchange ~~data, data from the WECC Interchange Tool, and ACE data.~~, as required in Requirement R8.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority:

~~The Regional Entity shall serve as~~As defined in the NERC Rules of Procedure, "Compliance Enforcement Authority~~.~~

~~For entities that do not work for~~ " means NERC or the Regional Entity~~,~~ in their respective roles of monitoring and enforcing compliance with the ~~Regional Entity shall serve as the Compliance Enforcement Authority.~~

~~For~~NERC Reliability ~~Coordinators and other functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority~~Standards.

~~For responsible entities that are also Regional Entities, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.~~

~~**1.1 Compliance Monitoring and Assessment Processes:**~~

~~Compliance Audits~~

~~Self-Certifications~~

~~Spot Checking~~

~~Compliance Investigations~~

~~Self-Reporting~~

~~Complaints~~

1.2. Evidence Retention:

The following evidence retention ~~periods~~period(s) 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 Balancing~~The applicable entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority ~~in the Western Interconnection shall~~ to retain specific evidence for a longer period of time as part of an investigation.

- Each Balancing Authority in the WI shall keep the following records for the preceding calendar year (January – December) plus the current calendar year:
  - Its values ~~of~~for PIIhourly, PIIaccum (On-Peak and Off-Peak), ~~A~~ΔTE, and any month-end adjustments ~~for the preceding calendar year (January –~~

~~**December), as well as the current calendar year**~~.

- ~~Each Balancing Authority in the Western Interconnection shall retain the amount of time~~ Documentation illustrating any period(s) during which the Balancing Authority operated without ATEC ~~for the preceding calendar year (January – December), as well as the current calendar year.~~, including the reason ATEC was not in operation.

~~1.2 Additional Compliance Information~~

~~None~~

~~**Table of Compliance Elements**~~

1.3 Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, "Compliance Monitoring and Enforcement Program" 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.

Violation Severity Levels

R #	Violation Severity Levels			
	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	NA	NA	NA	The Balancing Authority failed to use the Interchange Software as the sole source to calculate ATEC.
~~R1~~**R2.**	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 150%, but was less than or equal to 160% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 160%, but was less than or equal to 170% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 170%, but was less than or equal to 180% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 180% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.
~~R2~~**R3.**	The Balancing Authority did not recalculate PIIhourly and adjust the PIIaccum within 90 days of the discovery of the error; but made the	The Balancing Authority did not recalculate PIIhourly and adjust the PIIaccum within 120 days of the discovery of the error; but made the	The Balancing Authority did not recalculate PIIhourly and adjust the PIIaccum within 150 days of the discovery of the error; but made the	The Balancing Authority did not recalculate PIIhourly and adjust PIIaccum within 180 days of the discovery of the error.

	required recalculations and adjustments within 120 days.	required recalculations and adjustments within 150 days.	required recalculations and adjustments within 180 days.	
R4.	The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 24 hours, but less than or equal to 72 hours.	The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 72 hours, but less than or equal to 120 hours.	The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 120 hours, but less than or equal to 168 hours.	The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 168 hours.
R5.	N/A	N/A	N/A	The Balancing Authority is not able to change its AGC operating mode to correspond to current operating conditions.
R6.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in less than or equal to two hours.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in less than or equal to four hours.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in less than or equal to six hours.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in more than six hours.
R7.	NA	NA	NA	The Balancing Authority making a month-end adjustment failed to input that value as part of its Net Actual Interchange.
R8.	NA	NA	NA	The Balancing Authority making a month-end

				adjustment failed to add that value to its accumulated Primary Inadvertent Interchange.

D. Regional Variances

None.

E. Associated Documents

None.

Version History

Version	Date	Action	Change Tracking
1	February 4, 2003	Effective Date.	New
1	October 17, 2006	Created Standard from Procedure.	Errata
1	February 6, 2007	Changed the Standard Version from 0 to 1 in the Version History Table.	Errata
1	February 6, 2007	The upper limit bounds to the amount of Automatic Time Error Correction term was inadvertently omitted during the Standard Translation. The bound was added to the requirement R1.4.	Errata
1	February 6, 2007	The statement "The Time Monitor may declare offsets in 0.001-second increments" was moved from TEoffset to TDadj and offsets was corrected to adjustments.	Errata
1	February 6, 2007	The reference to seconds was deleted from the TE offset term.	Errata
1	June 19, 2007	The standard number BAL-STD-004-1 was changed to BAL-004-WECC-01 to be consistent with the NERC Regional Reliability Standard Numbering Convention.	Errata
2	December 19, 2012	Adopted by NERC Board of Trustees.	
2	October 16, 2013	A FERC Letter Order was issued on October 16, 2013, approving BAL-004-WECC-02. This standard will become enforceable on April 1, 2014.	

Version	Date	Action	Change Tracking
3	December 6, 2017	Approved by the WECC Board of Directors.	Five-year review. The project: 1) relocates the Background section to the preamble of the Guidance section, 2) adds On-Peak and Off-Peak parameters in Requirement R1/M1, 3) addresses WECC Interchange Tool software successors throughout, 4) conforms the document to current drafting conventions (R1/M1, R4/M4), and 5) addresses non-substantive syntax and template concerns.
3	February 8, 2018	Adopted by the NERC Board of Trustees.	

~~R #~~	~~Time Horizon~~	~~VRF~~	~~Violation Severity Levels~~			
			~~Lower VSL~~	~~Moderate VSL~~	~~High VSL~~	~~Severe VSL~~

~~R3~~	~~Real-Time Operations~~	~~Medium~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 24 hours, but less than or equal to 72 hours.~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 72 hours, but less than or equal to 120 hours.~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 120 hours, but less than or equal to 168 hours~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 168 hours.~~
~~R4~~	~~Operations Assessment~~	~~Medium~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within 50 minutes, but made the required calculations in less than or equal to two hours.~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within two hours, but made the required calculations in less than or equal to four hours.~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within four hours, but made the required calculations in less than or equal to six hours.~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within six hours.~~
~~R5~~	~~Real-Time Operations~~	~~Medium~~	~~N/A~~	~~N/A~~	~~N/A~~	~~The Balancing Authority is not able to change its AGC operating mode between Flat Frequency (for blackout restoration; Flat Tie Line (for loss of frequency~~

R #	Time Horizon	VRF	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
						telemetry); Tie Line Bias; or Tie Line Bias plus Time Error control (used in ATEC mode).
R6	Operations Assessment	Medium	N/A	N/A	N/A	When making adjustments to hourly Inadvertent Interchange or ΔTE, the Balancing Authority did not recalculate the PII_{hourly} and the $PII_{accum.}$ for the On-Peak and Off-Peak periods.
R7	Operations Assessment	Medium	N/A	N/A	N/A	When making any month-end meter reading adjustments to Inadvertent Interchange, the Balancing Authority did not make the same adjustment to the $PII_{accum.}$

~~R #~~	~~Time Horizon~~	~~VRF~~	~~Violation Severity Levels~~			
			~~Lower VSL~~	~~Moderate VSL~~	~~High VSL~~	~~Severe VSL~~
~~R8~~	~~Operations Assessment~~	~~Medium~~	~~N/A~~	~~N/A~~	~~N/A~~	~~The Balancing Authority paid back Inadvertent Interchange using bilateral and unilateral payback rather than using ATEC.~~

Guidelines and Technical Basis

Background

In February 2003, the WECC Automatic Time Error Correction (ATEC) Procedure (Procedure) became effective for all Balancing Authorities in the Western Interconnection. The original intent of the Procedure was to minimize the number of Manual Time Error Corrections in the Western Interconnection. ATEC provides the added benefit of a superior approach over NERC Reliability Standard BAL-004-0 – Time Error Correction for assigning costs and providing for the equitable payback of Inadvertent Interchange. In October 2006, the Procedure became a WECC Criterion. In May 2009, FERC issued Order No.723 that approved Regional Reliability Standard BAL-004-WECC-1 - Automatic Time Error Correction, as submitted by NERC. In addition, the Commission directed WECC to develop several clarifying modifications to BAL-004-WECC-1 using the FERC-approved Process for Developing and Approving WECC Standards. The Effective Date of the BAL-004-WECC-1 standard was July 1, 2009. BAL-004-WECC-1 required Balancing Authorities within the Western Interconnection to maintain Interconnection frequency within a predefined frequency profile and to ensure that Time Error Corrections were effectively conducted in a manner that did not adversely affect the reliability of the Interconnection. In September 2009, WECC received WECC Standards/Regional Criterion Request Form (Request) WECC-0068, which was a request for modification of BAL-004-WECC-1. In July 2010, the chair of the WECC Operating Committee assigned the Request to the Performance Work Group (PWG) for development.

Requirement R1:

Premise: Each3	May 30, 2018	FERC Order issued approving BAL-004-WECC-3. Docket No. RD18-2-000. Effective Date October 1, 2018.	
4	March 13, 2024	WECC Board of Directors Approved	This project: 1) expands the existing Background section, 2) creates a Standard-specific definition (Interchange Software); 3) creates a requirement to use the Interchange Software; 4) addresses treatment of Balancing Authorities that do not have a full year of operating data; 5) consolidates and clarifies requirements; and 6) updates the document to NERC's newest templates.

Standard Attachments

Not used.

G. Rationale

Nomenclature Update

To conform to NERC's definitional approach, the legacy term Net Actual Interchange (NAI) was replaced with Actual Net Interchange (NI_A). Net Scheduled Interchange (NSI) was replaced with Scheduled Net Interchange (NI_S). The legacy terms and the updated terms are synonymous.

Requirement R1:

The goal of Requirement R1 is to ensure a consistent ATEC calculation within the WI.

Because ATEC is an automatic process, allowing inconsistent calculation of ATEC will cause imbalance in accumulations.

Requirement R2:

The goal of Requirement R2 is to limit the amount of PII_{accum} that a Balancing Authority can have at the end of each month.

To reach the goal, each Balancing Authority should ensure that the absolute value of its PII_{accum} for both the ~~On-Peak~~on-peak period and the ~~Off-Peak~~off-peak period each individually does not exceed 150% of the previous year's Peak Demand for load-serving Balancing Authorities, and 150% of the previous year's peak generation for generation-only Balancing Authorities. The Balancing Authority is required to keep each PII_{accum} period within the limit. For example, the Balancing Authorities actions may include:

- Identifying and correcting the source of any metering or accounting error(s) and recalculating the hourly Primary Inadvertent Interchange (**PII_{hourly}**) and the PII_{accum} from the time of the error;
- Validating the implementation of ATEC; or
- Setting L_{max} equal to L_{10}.until the PII_{accum} is below the limit in Requirement R1.

~~**Justification:**~~This approach is required because PII_{accum} may grow from month-end adjustments and metering errors, even with the inclusion of I_{ATEC} in the ACE equation.

~~**Goal: To limit the amount of PII_{accum} that a Balancing Authority can have at the end of each month.**~~

~~**Requirement R2:**~~

~~**Premise:**~~ **Requirement R3:**

The goal of Requirement R3 is to promote: 1) the timely correction of errors in the calculation of PII and PII_{accum}, and 2) the accurate, fair, and timely payback of accumulated PII balances.

When a Balancing Authority finds an error in the calculation of its PII, the Balancing Authority needs time to correct the error and recalculate PII and PII_{accum}.

~~**Justification:**~~ Hourly adjustments to hourly Inadvertent Interchange (II) require a recalculation of the corresponding hourly PII value, the corresponding PII_{accum}, and all subsequent PII_{accum} for every hour up to the current hour.

The drafting team selected 90 days as a reasonable amount of time to correct an error and recalculate PII and PII_{accum}, since recalculation of PII and PII_{accum} is not a real-time operations reliability issue. As PII hourly is corrected, then PII_{accum} should be recalculated.

~~**Goal: To**~~**Requirement R4:**

The goal of Requirement R4 is to promote ~~the~~fair and timely ~~correction of errors in the calculation~~payback of ~~PII and~~ PII_{accum}~~.~~ balances by ensuring that ATEC remains in service whenever possible.

~~**Requirement R3:**~~

~~**Premise:**~~ When a Balancing Authority is not participating in ATEC, payback of PII_{accum} is delayed.

~~**Justification:**~~ The limit of 24 hours per quarter discourages a Balancing Authority from withdrawing ATEC participation, for example, for economic gain during selected hours. If the limits were increased to 60 hours, a Balancing Authority could technically withdraw ATEC participation for one hour from Monday to Friday.

~~**Goal**: To promote fair and timely payback of PII_{accum} balances.~~

Requirement ~~R4~~R5:

~~**Premise**: PII_{hourly}, PII_{accum}, and I_{ATEC} should be determined before the next scheduling hour begins.~~

~~**Justification: To promote timely calculations 50 minutes was selected because it is before the next hour ramp begins and permits time**~~A review of NERC Standards conducted by the Version 4 drafting team concluded that this Requirement is best located in a Standard focused on Automatic Generator Control (AGC). However, until an AGC-specific Standard is drafted, the Requirement should not be retired.

The goal of Requirement R5 is to ~~collect~~ensure that AGC has the ~~data and resolve interchange metering values.~~

~~**Goal**: To promote the timely calculation of PII_{hourly}, PII_{accum}, and I_{ATEC}.~~

~~**Requirement R5:**~~
~~**Premise: The ACE equation, and hence the AGC mode, will contain any number of parameters based on system**~~ability to respond to varying operating conditions. ~~**Various AGC modes are identified corresponding to those operating conditions, as well as the specific sets of parameters included in the ACE equation.**~~

~~**Justification**: Changing to the proper operating mode, corresponding to current operating conditions, affords proper movement of generating units in response to those conditions. The addition of the ATEC term results in an additional AGC mode and a different set of parameters. The inability to correctly calculate the ATEC term would dictate that AGC not be operated in the ATEC mode.~~

~~**Goal**: To set the AGC mode and calculate ACE in a manner that corresponds to the system operating conditions and to accommodate changes in those conditions.~~

Requirement R6:

~~**Premise:**~~ Not used.

~~Hourly adjustments to hourly Inadvertent Interchange (II) require a recalculation of the corresponding hourly PII value, the corresponding PII_{accum}, and all subsequent PII_{accum} for every hour up to the current hour.~~

~~**Justification**: As PII_{hourly} is corrected, then PII_{accum} should be recalculated.~~

~~**Goal**: To promote accurate, fair and timely payback of accumulated PII balances.~~

Requirement R7:

~~**Premise:** Month-end meter reading adjustments are made, for example, when a Balancing Authority performs monthly comparisons of recorded month-end Net Actual Interchange (NI_A) values derived from hourly Actual Interchange Telemetered Values against month-end Actual Interchange Register Meter readings.~~

~~**Justification**: Month-end adjustments to II_{accum} are applied as 100% PII_{accum}. 100% was chosen for simplicity to bilaterally assign PII_{accum} to both Balancing Authorities, since the effect of this metering error on system frequency is not easily determined over the course of a month.~~

~~**Goal**: To provide a mechanism by which corresponding month-end II adjustments can be **applied** to PII_{accum}, when such adjustments cannot be attributed to any one hour or series of hours.~~

Not used.

Requirement R8:

~~**Premise:** ATEC includes automatic unilateral payback of Primary Inadvertent Interchange and Secondary Inadvertent Interchange.~~

~~**Justification**: Additional unilateral and bilateral exchanges disturb the balance and distribution between Primary Inadvertent Interchange and Secondary Inadvertent Interchange throughout the Interconnection; thereby stranding Secondary Inadvertent Interchange.~~

~~**Goal:** To not strand Secondary Inadvertent Interchange.~~

Not used.

~~Version History~~

~~Version~~	~~Date~~	~~Action~~	~~Change Tracking~~
~~1~~	~~February 4, 2003~~	~~Effective Date.~~	~~New~~
~~1~~	~~October 17, 2006~~	~~Created Standard from Procedure.~~	~~Errata~~
~~1~~	~~February 6, 2007~~	~~Changed the Standard Version from 0 to 1 in the Version History Table.~~	~~Errata~~
~~1~~	~~February 6, 2007~~	~~The upper limit bounds to the amount of Automatic Time Error Correction term was inadvertently omitted during the Standard Translation. The bound was added to the requirement R1.4.~~	~~Errata~~
~~1~~	~~February 6, 2007~~	~~The statement "The Time Monitor may declare offsets in 0.001 second increments" was moved from TEoffset to TDadj and offsets was corrected to adjustments.~~	~~Errata~~
~~1~~	~~February 6, 2007~~	~~The reference to seconds was deleted from the TE offset term.~~	~~Errata~~
~~1~~	~~June 19, 2007~~	~~The standard number BAL-STD-004-1 was changed to BAL-004-WECC-01 to be consistent with the NERC Regional Reliability Standard Numbering Convention.~~	~~Errata~~
~~2~~	~~December 19, 2012~~	~~Adopted by NERC Board of Trustees.~~	
~~2~~	~~October 16, 2013~~	~~A FERC Letter Order was issued on October 16, 2013, approving BAL-004-WECC-02. This standard will become enforceable on April 1, 2014.~~	

Version	Date	Action	Change Tracking
3	December 6, 2017	Approved by the WECC Board of Directors.	Five year review. The project: 1) relocates the Background section to the preamble of the Guidance section, 2) adds On-Peak and Off-Peak parameters in Requirement R1/M1, 3) addresses WECC Interchange Tool software successors throughout, 4) conforms the document to current drafting conventions (R1/M1, R4/M4), and, 5) addresses non-substantive syntax and template concerns.
3	February 8, 2018	Adopted by the NERC Board of Trustees.	
3	May 30, 2018	FERC Order issued approving BAL-004-WECC-3. Docket No. RD18-2-000. Effective Date October 1, 2018.	