

Standard BAL-004-WECC-01 — Automatic Time Error Correction

A. Introduction

Title: — Automatic Time Error Correction

<u>Document Title</u>	<u>WECC Standard BAL-004-WECC-02</u>
<u>File Name</u>	
<u>Category</u>	<u>(X) Regional Reliability Standard</u> <u>() Regional Criterion</u> <u>() Policy</u> <u>() Guideline</u> <u>() Report or other</u> <u>() Charter</u>
<u>Document date</u>	
<u>Adopted/approved by</u>	
<u>Date adopted/approved</u>	
<u>Custodian (entity responsible for maintenance and upkeep)</u>	
<u>Stored/filed</u>	<u>Physical location:</u> <u>Web URL:</u>
<u>Previous name/number</u>	<u>(if any)</u>
<u>Status</u>	<u>() in effect</u> <u>() usable, minor formatting/editing required</u> <u>() modification needed</u> <u>() superseded by _____</u> <u>() other _____</u> <u>() obsolete/archived</u>

Version Control

<u>Version</u>	<u>Date</u>	<u>Action</u>	<u>Change Highlights</u>
<u>1</u>	<u>4/15/2011</u>	<u>Version 1 Posted</u>	<u>Addressed FERC Order 723</u>
<u>2</u>		<u>Version 2 Posted 11/4/11</u>	<u>Addressed comments from Version 1 posting</u>
<u>3</u>		<u>Version 3 Posted 12/15/11</u>	<u>Addressed comments from Version 2 posting</u>
<u>4</u>		<u>Standing Committee Approval</u>	
<u>5</u>		<u>WECC Board Approval</u>	

WECC Standard Development Roadmap

This section is maintained by the drafting team during the development of the standard, and will be removed when the standard becomes effective.

Development Steps Completed:

<u>Completed Actions</u>	<u>Completion Date</u>
<u>1. Request received</u>	<u>09/26/2009</u>
<u>2. Requested deemed Complete/Valid/Team Site created</u>	<u>10/06/2009</u>
<u>3. Pre-SRRC announcement</u>	<u>10/16/2009</u>
<u>4. SRRC notified</u>	<u>10/26/2009</u>
<u>5. SRRC assigned the Request to Standing Committee</u>	<u>11/2009</u>
<u>6. Due to lack of manpower/resources this Request was placed on hold until July 2010 by Mr. Don Watkins, OC chair</u>	
<u>7. Assigned to the Performance Work Group by Mr. Hulls, incoming OC chair</u>	<u>07/16/2010</u>
<u>8. Drafting team (DT) announced / notice sent to DT members</u>	<u>07/16/2010</u>
<u>9. Notice of development / first 30-day notice</u>	<u>09/2/2010</u>
<u>10. New committee chair orientation meeting</u>	<u>08/18/2010</u>
<u>11. First DT meeting</u>	<u>11/10/2010</u>
<u>12. Notice of Concurrence sent by DT (see step 3)</u>	<u>11/10/2010</u>
<u>13. New meeting announcement / also included in first meeting minutes</u>	
<u>14. DT meetings completed</u>	<u>12/15/10</u> <u>01/18/11</u> <u>02/10/11</u> <u>03/11-12/11</u> <u>03/24/11</u> <u>04/11/11</u>
<u>15. Complete first draft and Complete Quality Control Checklist</u>	<u>04/13/2011</u>
<u>16. Post first draft for 45-day comment period</u>	<u>04/15/2011</u>
<u>17. Meet to answer to comments, address impact statement and draft responses</u>	<u>06/2-3/2011</u> <u>06/14/2011</u> <u>06/23/2011</u> <u>06/29/2011</u>
<u>18. Post responses to comments received during 45-day comment period</u>	<u>06/29/2011</u>
<u>19. Meet to answer to comments, address impact statement and draft responses</u>	<u>08/8/2011</u> <u>08/15/2011</u> <u>08/30/2011</u> <u>11/01/2011</u>
<u>20. Post the Version 2 for a 30-day comment period</u>	<u>11/04/2011</u>
<u>21. Post consideration of comments of Version 2</u>	<u>12/15/2011</u>
<u>22. Post the third draft for 30-day comment period</u>	<u>12/15/2011</u>
<u>23. Project WECC-0068 Version 3 Comments were due</u>	<u>01/16/2012</u>
<u>24. Meeting to answer comments, address impact statement, draft</u>	<u>01/18/2012</u>

<u>Completed Actions</u>	<u>Completion Date</u>
<u>responses</u>	
<u>25. Post responses to comments</u>	<u>02/13/2012</u>
<u>26. Post for Operating Committee approval</u>	<u>02/24/2012</u>

Description of Current Draft:

On May 21, 2009, the Federal Energy Regulatory Commission (Commission or FERC) issued a Final Rule approving WECC Regional Reliability Standard BAL-004-WECC-1 – Automatic Time Error Correction (BAL-004-WECC-1) and directing WECC to make several clarifying modifications to the standard using the FERC-approved Process for Developing and Approving WECC Standards.¹ In addition, WECC staff identified additional modifications to BAL-004-WECC-1 that would clarify the intent without changing the requirements. Finally, the industry has commented that there is confusion concerning BAL-004-WECC-1 Requirement R3 that requires that the Area Control Error (ACE) equation used for North American Electric Reliability Corporation (NERC) reports shall be the same ACE equation as that used during Automatic Generation Control (AGC) mode. This seems to conflict with NERC's comments in response to the Notice of Proposed Rulemaking regarding the interpretation of NERC Reliability Standard BAL-001-0.1a – Real Power Balancing Control Performance (BAL-001-0.1a)² wherein NERC stated that entities may use an Automatic Time Error Correction (ATEC) ACE equation for control but should use raw ACE for CPS reporting.³ As part of this filing WECC has submitted a proposed regional variance to BAL-001-0.1a to address this conflict.

The purpose of the refinements to BAL-004-WECC-1 as proposed in WECC Regional Reliability Standard BAL-004-WECC-2 – Automatic Time Error Correction (BAL-004-WECC-2) is to implement the directives in FERC Order 723 and to make other clarifications to BAL-004-WECC-1 as the industry deems necessary, while maintaining the Western Interconnection's reliability. The FERC Order 723 directives are as follows:

1. "The Commission is concerned that the phrases 'large accumulation' and 'in such a situation' as used in Requirement R1.2 leaves to individual interpretation when a 'large' amount of primary inadvertent has accumulated. The ERO and WECC agree that the provision could benefit from further clarity. Accordingly, the Commission adopts its NOPR proposal and directs WECC to develop revisions to the provision so that a balancing authority will know with specificity the circumstances that trigger the actions required by Requirement R1.2."⁴
2. "Consistent with the NOPR, pursuant to section 215(d) (5) of the FPA, the Commission directs WECC to develop a modification to the regional Reliability Standard consistent with WECC's and NERC's explanation that the limit set forth in Requirement 2 of '24 hours per calendar quarter' is an accumulated total for the period, resulting from either a singular event or a cumulative time limit from a number of events."⁵
3. "[The Commission] direct[s] that the violation risk factors assigned to BAL-004-WECC-01, Requirements R1, R2, R3, and R4 be modified from 'lower' to 'medium.' The ERO and WECC must submit a filing within 60 days of the effective date of this Final Rule that

¹ Western Electricity Coordinating Council Regional Reliability Standard Regarding Automatic Time Error Correction, Order No. 723, 127 FERC Stats. & Regs. ¶ 61,176, 74 Fed. Reg. ¶ 25,422 (2009) (hereafter Order 723).

² Modification of Interchange and Transmission Loading Relief Reliability Standards; and Electric Reliability Organization Interpretation of Specific Requirements of Four Reliability Standards, Notice of Proposed Rulemaking, 123 FERC Stats. & Regs. ¶ 61,064, 73 Fed. Reg. ¶ 22,856 (2008).

³ Comments of the North American Electric Reliability Corporation on the Notice of Proposed Rulemaking regarding Interchange and Transmission Loading Relief under RM08-7, pgs 9-10, FERC Docket No. RM08-7-000, filed June 12, 2008.

⁴ Order 723 at ¶ 30.

⁵ Id at ¶ 34.

includes the directed modifications.”⁶ These modifications were addressed in a compliance filing dated August 28, 2009.⁷

4. “The Commission adopts its NOPR proposal and directs the ERO and WECC to submit violation severity levels for each Requirement and sub-Requirement that has been assigned a violation risk factor. To allow adequate time for the development of the violation severity levels, the ERO and WECC must submit a filing within 120 days of the effective date of this Final Rule that includes the directed violation severity levels.”⁸ These modifications were addressed in a compliance filing date October 23, 2009.⁹
5. In response to Xcel comments, FERC referenced their approval, in Order No. 713, of an ERO interpretation stating that as long as Balancing Authorities use raw ACE for Control Performance Standard (CPS) reporting purposes and WECC ATEC (ATEC) ACE for control, it is not a violation of BAL-001-0.1a, Requirement 1.¹⁰ WECC Stakeholders believe it is more appropriate to use the ATEC ACE for control and CPS reporting. To clarify this difference, WECC has developed a regional variance BAL-001-0.1a.

The implementation of an ATEC ACE is part of a regional variance to BAL-001-0.1a associated with this posting. The purpose of this filing is to meet the directives of FERC Order 723 while refining for clarity the existing requirements of BAL-004-WECC-1. Refinements to BAL-004-WECC-1 include:

1. A requirement that defines the large accumulation at 150% of previous year’s peak demand or peak generation for generation-only Balancing Authorities. The action required is that the Balancing Authority shall not permit the PII_{accum} to exceed the defined value, which is demonstrated at the end of each month.
2. A clarification in response to the FERC order that the accumulated time for ATEC out of service shall not exceed 24 hours during a calendar quarter.

BAL-004-WECC-2 retains the requirement for Balancing Authorities to compute the Automatic Time Error Correction and Primary Inadvertent Interchange by 50 minutes after the hour and requires that Balancing Authorities have the ability to operate their Automatic Generation Control in other modes. In addition, Balancing Authorities are required to recalculate Primary Inadvertent Interchange when hourly and month-end adjustments are made.

In Version 3 in order to prevent the stranding of Secondary Inadvertent Interchange the drafting team added a Requirement R8 that restricts the payback of Inadvertent Interchange to using ATEC rather than through bilateral and unilateral payback methods.

The proposed BAL-004-WECC-2 will replace the Automatic Time Error Correction definition in the NERC Glossary of Terms in the WECC Regional Definitions section. The WECC definitions for Primary Inadvertent Interchange and Secondary Inadvertent Interchange will be retained under the WECC Regional Definitions in the *Glossary of Terms Used in NERC Reliability Standards*.

Development Plan:

<u>Anticipated Actions</u>	<u>Anticipated Date</u>
<u>1. Post draft standard for 45-day NERC comment period</u>	<u>02/01/2012</u>
<u>2. NERC comment period ends</u>	<u>03/27/2012</u>

⁶ Id at ¶ 51.

⁷ Compliance Filing of the North American Electric Reliability Corporation in response to Paragraphs 26 and 51 of Order No. 723 – Directed Modification of Violation Risk Factors for Regional Reliability Standard BAL-004-WECC-1, Automatic Time Error Correction, Docket No. RM08-12-000, filed August 28, 2009

⁸ Order 723 at ¶ 54.

⁹ Compliance Filing of the North American Electric Reliability Corporation in response to Paragraphs 26 and 54 of Order No. 723, Docket No. RM08-12-000, filed October 23, 2009

¹⁰ Order 723 at ¶ 44-45.

<u>3. Operating Committee approves proposed standard</u>	<u>03/27/2012</u>
<u>4. DT completes review and consideration of industry comments to NERC posting</u>	<u>04/27/2012</u>
<u>5. Post draft standard for WECC Board approval</u>	<u>05/01/2012</u>
<u>6. WECC Board approval</u>	<u>06/21/2012</u>
<u>7. Post draft standard for 15-day NERC comment period</u>	<u>06/25/2012</u>
<u>8. NERC 15-day comment period ends</u>	<u>07/2012</u>
<u>9. DT completes review and consideration of industry comments to NERC posting</u>	<u>07/2012</u>
<u>10. Submit NERC Board of Trustees approval request</u>	<u>08/2012</u>
<u>11. Receive NERC Board approval</u>	<u>08/2012</u>

Implementation Plan

The Implementation Plan is to make the WECC Regional Variance to BAL-001-0.1a and BAL-004-WECC-2 effective on the first day of the second quarter, after regulatory approval in areas where applicable. Since entities are already controlling their Balancing Authority Area with the ATEC ACE equation – but are reporting using the NERC raw ACE equation for reporting CPS1 – the transition to controlling and reporting using the ATEC ACE should be minimal. Additionally, it should not take much time to implement the limits to a Balancing Authority’s Accumulated Primary Inadvertent Interchange.

Definitions of Terms Used in Regional Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these definitions will be removed from the standard and added to the NERC Glossary under WECC Regional Definitions. In addition the current definitions for “**Primary Inadvertent Interchange**” and “**Secondary Inadvertent Interchange**” will be retained in the Glossary of Terms Used in NERC Reliability Standards under WECC Regional Definitions.

Automatic Time Error Correction: The addition of a component to the ACE equation that modifies the control point for the purpose of continuously paying back Primary Inadvertent Interchange to correct accumulated time error.

A. Introduction

1. Title: Automatic Time Error Correction

2. Number: — BAL-004-WECC-0102

3. Purpose: — To maintain Interconnection frequency **within a predefined frequency profile under all conditions (i.e. normal and abnormal), and and** to ensure that Time Error Corrections and Primary Inadvertent Interchange (PII) payback are effectively conducted in a manner that does not adversely affect the reliability of the Interconnection.

4. Applicability:

4.1. Functional Entities

4.1.—1 Balancing Authorities (**BA**) that operate synchronously ~~to~~in the Western Interconnection.

5. Effective Date: On the first day of the ~~first~~second quarter, after applicable regulatory approval has been received (or the Reliability Standard otherwise becomes effective the first day of the fourth quarter following NERC Board adoption where regulatory approval is not required).

B.—Requirements

R1. ~~Each BA that operates synchronously to the Western Interconnection shall continuously operate utilizing Automatic Time Error Correction (ATEC) in its Automatic Generation Control (AGC) system. [Risk Factor: Lower]~~

$$ACE_{ATEC} = (NI_A - NI_S) - 10B_i (F_A - F_S) - T_{ob} + I_{ME}$$

Where:

~~NI_A = Net Interchange Actual (MW).~~

~~F_A = Frequency Actual (Hz).~~

~~F_S = Frequency Scheduled (Normally 60 Hz).~~

~~B_i = Frequency Bias for the Balancing Authority's Area (MW / 0.1 Hz).~~

~~T_{ob} = Remaining Bilateral Payback for Inadvertent Interchange created prior to implementing automatic payback (MW).~~

~~I_{ME} = Meter Error Correction (MW).~~

$$NI_S = NI_S - \frac{H_{\text{Primary}}^{\text{on/off peak}}}{(1-Y)*H}$$

~~NI_S = Net Interchange Scheduled (MW).~~

~~Y = B_i / B_S.~~

~~H = Number of Hours used to payback Inadvertent Interchange Energy. The WECC Performance Work Group has set the value of H to 3.~~

~~B_S = Frequency Bias for the Interconnection (MW / 0.1 Hz).~~

~~H_{Primary}^{on/off peak} = is the Balancing Authority's accumulated primary inadvertent interchange~~

~~in MWh. An On Peak and Off Peak accumulation accounting is required.~~

~~Where:~~

$$H_{\text{primary}}^{\text{on/off-peak}} = \text{last period's } H_{\text{primary}}^{\text{on/off-peak}} + (1-Y) * (H_{\text{actual}} - B_i * \Delta TE/6)$$

H_{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.

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Where:

$$\Delta TE = TE_{\text{end-hour}} - TE_{\text{begin-hour}} - TD_{\text{adj}} - (t) * (TE \text{ offset})$$

TD_{adj} is any operator adjustment to the control center Time Error to correct for differences with the time monitor.

t is the number of minutes of Manual Time Error Correction that occurred during the hour.

$TE \text{ offset}$ is 0.000 or +0.020 or -0.020.

R1.1. The absolute value of the WECC Automatic Time Error Correction term is limited as follows:

$$\left| \frac{H_{\text{primary}}^{\text{on/off peak}}}{(1-Y) \cdot H} \right| \leq L_{\text{max}}$$

Where L_{max} is chosen by the Balancing Authority and is bounded as follows:

$$0.20 * |B_{it}| \leq L_{\text{max}} \leq L_{10}$$

L_{10} is the Balancing Authority CPS2 limit in MW. If the WECC Automatic Time Error Correction term is less than the upper limit, use the calculated WECC Automatic Time Error Correction term.

R1.2. Large accumulations of primary inadvertent point to an invalid implementation of ATEC, loose control, metering or accounting errors. A BA in such a situation should identify the source of the error(s) and make the corrections; recalculate the primary inadvertent from the time of the error, adjust the accumulated primary inadvertent caused by the error(s), validate the implementation of ATEC, set L_{max} equal to L_{10} and continue to operate with ATEC reducing the accumulation as system parameters allow.

R2. Each BA that is synchronously connected to the Western Interconnection and operates in any AGC operating mode other than ATEC shall notify all other BAs of its operating mode through the designated Interconnection communication system. Each BA while synchronously connected to the Western Interconnection will be allowed to have ATEC out of service for a maximum of 24 hours per calendar quarter, for reasons including maintenance and testing. [Risk Factor: Lower]

6. 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 the current 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.

B. Requirements and Measures

R1. Following the conclusion of each month each Balancing Authority shall verify that the absolute value of its Accumulated Primary Inadvertent Interchange (PII_{accum}) for both the monthly On-Peak period and the monthly Off-Peak period are each individually less than or equal to:

1.1. For load-serving Balancing Authorities, 150% of the previous calendar year's integrated hourly Peak Demand,

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

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

M1. Forms of acceptable evidence of compliance with Requirement R1 include but are not limited to any one of the following:

- Data, screen shots from the WECC Interchange Tool (WIT),
- Data, screen shots from the internal Balancing Authority tool, or
- Production of data from any other databases, spreadsheets, displays.

R2. Each Balancing Authority shall, upon discovery of an error in the calculation of PII_{hourly} , recalculate within 90 days, the value of PII_{hourly} and adjust the PII_{accum} from the time of the error. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M2. Forms of acceptable evidence of compliance with Requirement R2 include but are not limited to any one of the following:

- Data, screen shots from the WIT,

Rationale for R1:

Premise: Each Balancing Authority should ensure that the absolute value of its PII_{accum} for both the On-Peak period and the 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 take action 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: 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.

Rationale for R2:

Premise: 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: 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.

Goal: To promote the timely correction of errors in the calculation of PII and PII_{accum} .

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.

- Data, screen shots from the internal Balancing Authority tool, or
- Production of data from any other databases, spreadsheets, displays.

R3. Each Balancing Authority shall keep its Automatic Time Error Correction (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. [Violation Risk Factor: Medium] [Time Horizon: Same-day Operations]

M3. Forms of acceptable evidence of compliance with Requirement R3—BAs in the ~~Western Interconnection~~ may include, but are 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 the following by 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 that demonstrate compliance,
- Data, screen shots from internal Balancing Authority tool that demonstrate compliance, or
- Data from any other databases, spreadsheets, displays that demonstrate compliance.

R5. Each Balancing Authority shall be able to change their AGCs Automatic Generation Control 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~~Control (used in ATEC

Rationale for R4:

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 to collect the data and resolve interchange metering values.

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

Rationale for R5:

Premise: The ACE equation, and hence the AGC mode, will contain any number of parameters based on system 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.

~~mode). The ACE used for NERC reports shall be the same ACE as the AGC), to correspond to current operating mode in use. [conditions. [Violation Risk Factor: Lower]Medium] [Time Horizon: Real-Time Operations]~~

~~R4. Regardless~~**M5. Forms of acceptable evidence of compliance with Requirement R5 include but are not limited to any one of the AGC operating mode each BA in the Western Interconnection following:**

- ~~• Screen shots from Energy Management System.~~
- ~~• Demonstration using an off-line system.~~

R6. Each Balancing Authority shall compute its recalculate the PII_{hourly} and PII_{accum} for the On-Peak and Off-Peak periods whenever adjustments are made to hourly Primary Inadvertent Interchange when hourly checkout is complete. If hourly checkout is not complete by 50 minutes after the hour, compute Primary or ΔTE. [Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]

M6. Forms of acceptable evidence of compliance with Requirement R6 include but are not limited to any one of the following:

- ~~• Data, screen shots from the WECC Interchange Tool that demonstrate compliance,~~
- ~~• Data, screen shots from an internal Balancing Authority tool that demonstrate compliance with, or~~
- ~~• Data from any other databases, spreadsheets, displays that demonstrate compliance.~~

R7. Each Balancing Authority shall make the same adjustment to the PII_{accum} as it did for any month-end meter reading adjustments to Inadvertent Interchange with best available. [Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]

M7. Forms of acceptable evidence of compliance with Requirement R7 include but are not limited to any one of the following:

- ~~• Data, screen shots from the WECC Interchange Tool that demonstrate compliance,~~

Rationale for R6:

Premise: 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.

Rationale 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 (NIA) 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 particular hour or series of hours.

- Data, screen shots from an internal Balancing Authority tool that demonstrate compliance.
- Production of data. This hourly value shall be added to the appropriate accumulated Primary from any other databases, spreadsheets, displays that demonstrate compliance.

R8. Each Balancing Authority shall payback Inadvertent Interchange balance for either On-Peak or Off-Peak periods. [Risk Factor: Lower using ATEC rather than bilateral and unilateral payback. [Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]

R4.1. Each BA in the Western Interconnection shall use the change in Time Error distributed by the Interconnection Time Monitor.

R4.2. All corrections to any previous hour Primary **M8.** Forms of acceptable evidence of compliance with Requirement R8 include but are not limited to historical On-Peak and Off-Peak Inadvertent Interchange shall be added to the appropriate On- or Off-Peak accumulated Primary Inadvertent Interchange.

Rationale 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.

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~~R4.3. Month-end Inadvertent Adjustments are 100% Primary Inadvertent Interchange and shall be added to the appropriate On- or Off-Peak accumulated Primary Inadvertent data, data from the WECC Interchange, unless such adjustments can be pinpointed to specific hours in which case R4.2 applies. Tool, and ACE data.~~

~~R4.4. Each BA in the Western Interconnection shall synchronize its Time Error to the nearest~~

~~0.001 seconds of the system Time Error by comparing its reading at the designated time each day to the reading broadcast by the Interconnection Time Monitor. Any difference shall be applied as an adjustment to its current Time Error.~~

C. Measures

~~M1. For Requirement R1, a BA shall provide upon request a document showing that it is correctly calculating its hourly Primary Inadvertent Interchange number that is used to calculate its accumulated Primary Inadvertent Interchange and how it is used in its ACE equation for Automatic Time Error Correction.~~

~~M2. For Requirement R2, a BA shall record the date, time, reason, and notification [to other BAs within the Western Interconnection] for any time it is not operating utilizing Automatic Time Error Correction (ATEC) in its AGC system.~~

~~M3. For Requirement R3, a BA in the Western Interconnection must be able to demonstrate its ability to change its AGC operating mode when requested or during compliance audits and readiness reviews.~~

~~M4. For Requirement R4, a BA in the Western Interconnection must record its hourly Primary Inadvertent Interchange and keep an accurate record of its accumulation of Primary Inadvertent Interchange for both~~

C. Compliance

1. Compliance Monitoring Process

1.1 Compliance Enforcement Authority

The Regional Entity shall serve as the Compliance Enforcement Authority.

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For 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.

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.

1.2 Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Investigations

Self-Reporting

Complaints

1.3 Evidence Retention

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

Each Balancing Authority in the Western Interconnection shall retain the values of PII_{hourly} , PII_{accum} (On-Peak and Off-Peak ~~accounts~~. These records must be available for review when requested or during compliance audits and readiness reviews.

~~D. Compliance~~

~~1. Compliance Monitoring Process~~

~~1.1. Compliance Monitoring Responsibility~~

~~Regional Entity~~

~~Compliance Monitoring Period and Reset time Frame~~

~~The reporting period for ATEC is one calendar quarter, starting on the first second of the quarter and ending on the final second of the quarter.~~

~~The Performance reset Period is one calendar quarter.~~

~~1.2. Data Retention~~

~~Each Balancing Authority in the Western Interconnection shall retain its hourly calculation of total and Primary Inadvertent Interchange calculated hourly, as well as the amount of Primary Inadvertent paid back hourly), ΔTE and any month-end adjustments for the preceding calendar year (January – December) ~~plus~~, as well as the current calendar year.~~

~~Each Balancing Authority in the Western Interconnection shall retain its total accumulated Inadvertent and total Primary Inadvertent, updated hourly, for On- and Off-Peak for the preceding calendar year (January – December) plus the current year.~~

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Each Balancing Authority in the Western Interconnection shall retain ~~its record of~~ the amount of time ~~it~~the Balancing Authority operated without ATEC ~~and the notification to the Interconnection of these times~~ for the preceding calendar year (January – December) ~~plus~~, as well as the current year.

~~The Compliance Monitor shall retain audit data for three~~ calendar ~~years~~year.

~~1.3.4~~ Additional Compliance Information

~~The Compliance Monitor shall use quarterly data to monitor compliance. The Compliance Monitor may also use periodic audits (on site, per a schedule), with spot reviews and investigations initiated in response to a complaint to assess performance.~~

~~The Balancing Authority in the Western Interconnection shall have the following documentation available for its Compliance Monitor to inspect during a scheduled, on-site review or within five business days of a request as part of a triggered investigation:~~

~~1.3.1. Source data for calculating Primary Inadvertent.~~

~~1.3.2. Data showing On and Off Peak Primary Inadvertent accumulations.~~

~~1.3.3. Data showing hourly payback of Primary Inadvertent.~~

~~1.3.4. Documentation on number of times not on ATEC and reasons for going off ATEC.~~

~~2. Violation Severity Levels~~

~~**2.1. Lower:** Time not in ATEC Mode greater than one day and less than or equal to three days, or if a Balancing Authority in the Western Interconnection operates without ATEC and does not notify other Balancing Authorities in the Western Interconnection 2 times in quarter.~~

~~**2.2. Moderate:** Time not in ATEC Mode greater than three days and less than or equal to five days, or if a Balancing Authority in the Western Interconnection operates without ATEC and does not notify other Balancing Authorities in the Western Interconnection 3 times in quarter.~~

~~**2.3. High:** Time not in ATEC Mode greater than five days and less than or equal to seven days, or if a Balancing Authority in the Western Interconnection operates without ATEC and does not notify other Balancing Authorities in the Western Interconnection 4 times in quarter.~~

~~**2.4. Severe:** Time not in ATEC Mode greater than seven days, or if a Balancing Authority in the Western Interconnection operates without ATEC and does not notify other Balancing Authorities in the Western Interconnection more than 4 times in quarter or Balancing Authority in the Western Interconnection cannot change AGC operating mode or Balancing Authority in the Western Interconnection incorrectly calculates Primary Inadvertent.~~

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~~Standard BAL-004-WECC-01 — Automatic Time Error Correction~~

~~Version History~~

None

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Table of Compliance Elements

Version #	Date/Time Horizon	Action/RE	Change-Tracking Violation Severity Levels			
			New/Lower VSL	Moderate VSL	High VSL	Severe VSL
1	February 4, 2003	Effective Date:				
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	
<u>1R1</u>	<u>February 6, 2007 Operations Assessment</u>	<u>Medium</u>	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 <u>R1.4. Following the conclusion of each month each Balancing Authority's absolute value of PII_{accum} 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 or peak</u>	Errata <u>Following the conclusion of each month each Balancing Authority's absolute value of PII_{accum} 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 or peak generation for generation-only Balancing Authorities.</u>	<u>Following the conclusion of each month each Balancing Authority's absolute value of PII_{accum} 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 or peak generation for generation-only Balancing Authorities.</u>	<u>Following the conclusion of each month each Balancing Authority's absolute value of PII_{accum} for either the On-Peak period or Off-Peak period exceeded 180% of the previous calendar year's Peak Demand or peak generation for generation-only Balancing Authorities.</u>

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Version #	Date/Time Horizon	Action/RE	Change-Tracking/Violation Severity Levels			
			New/Lower VSL	Moderate VSL	High VSL	Severe VSL
	February 4, 2003	Effective Date:	<u>generation for generation-only Balancing Authorities.</u>			
<u>1R2</u>	<u>February 6, 2007 Operations Assessment</u>	<u>Medium</u>	<u>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. The Balancing Authority did not recalculate PII_{hourly} and adjust the PII_{accum} within 90 days of the discovery of the error; but made the required recalculations and adjustments within 120 days.</u>	<u>ErrataThe Balancing Authority did not recalculate PII_{hourly} and adjust the PII_{accum} within 120 days of the discovery of the error; but made the required recalculations and adjustments within 150 days.</u>	<u>The Balancing Authority did not recalculate PII_{hourly} and adjust the PII_{accum} within 150 days of the discovery of the error; but made the required recalculations and adjustments within 180 days.</u>	<u>The Balancing Authority did not recalculate PII_{hourly} and adjust PII_{accum} within 180 days of the discovery of the error.</u>
<u>1R3</u>	<u>February 6, 2007 Real-Time Operations</u>	<u>Medium</u>	<u>The reference to seconds was deleted from the TE offset term. The Balancing Authority operated</u>	<u>ErrataThe Balancing Authority operated during a calendar quarter without ATEC in service for more</u>	<u>The Balancing Authority operated during a calendar quarter without ATEC in service for more</u>	<u>The Balancing Authority operated during a calendar quarter without ATEC in service for more</u>

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			New/Lower VSL	Moderate VSL	High VSL	Severe VSL
1	February-4, 2003	Effective Date:	during a calendar quarter without ATEC in service for more than an accumulated 24 hours, but less than or equal to 72 hours.	than an accumulated 72 hours, but less than or equal to 120 hours.	than an accumulated 120 hours, but less than or equal to 168 hours	than an accumulated 168 hours.
<u>1R4</u>	<u>June 19, 2007 Operations Assessment</u>	<u>Medium</u>	<u>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. 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.</u>	<u>Errata 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.</u>	<u>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.</u>	<u>The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within six hours.</u>
<u>R5</u>	<u>Real-Time Operations</u>	<u>Medium</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The Balancing Authority is not able to change its AGC</u>

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			New/Lower VSL	Moderate VSL	High VSL	Severe VSL
4	February-4, 2003	Effective Date:				<u>operating mode between Flat Frequency (for blackout restoration; Flat Tie Line (for loss of frequency telemetry); Tie Line Bias; or Tie Line Bias plus Time Error control (used in ATEC mode).</u>
<u>R6</u>	<u>Operations Assessment</u>	<u>Medium</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>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.</u>
<u>R7</u>	<u>Operations Assessment</u>	<u>Medium</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>When making any month-end meter reading adjustments to Inadvertent Interchange, the Balancing Authority</u>

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			New/Lower VSL	Moderate VSL	High VSL	Severe VSL
4	February-4, 2003	Effective Date:				<u>did not make the same adjustment to the PII_{accum}.</u>
<u>R8</u>	<u>Operations Assessment</u>	<u>Medium</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The Balancing Authority paid back Inadvertent Interchange using bilateral and unilateral payback rather than using ATEC.</u>

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Guidelines and Technical Basis

Requirement R1:

Requirement R2:

Requirement R3:

Requirement R4:

Requirement R5:

Requirement R6:

Requirement R7:

Requirement R8: