
**BEFORE THE
MINISTER OF ENERGY
OF THE PROVINCE OF ALBERTA**

**NORTH AMERICAN ELECTRIC)
RELIABILITY CORPORATION)**

**APPLICATION OF THE
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION
FOR APPROVAL OF ONE PROPOSED WESTERN ELECTRICITY
COORDINATING COUNCIL REGIONAL RELIABILITY STANDARD
REGARDING AUTOMATIC TIME ERROR CORRECTION AND THREE
DEFINITIONS**

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I. INTRODUCTION

The North American Electric Reliability Corporation (“NERC”) hereby requests approval of one regional reliability standard, BAL-004-WECC-01 — Automatic Time Error Correction (“ATEC”), proposed by the Western Electricity Coordinating Council (“WECC”) to be in effect only within the Western Interconnection. This application is the first request by NERC for approval of this proposed regional reliability standard.

On March 26, 2008, the NERC Board of Trustees approved, with conditions, BAL-004-WECC-01 regional reliability standard proposed by WECC. NERC requests approval of this WECC ATEC regional reliability standard, to be made effective in accordance with the implementation plan included with the regional reliability standard. **Exhibit A** to this filing sets forth the proposed WECC ATEC regional reliability standard and the three proposed definitions. **Exhibit B** is the NERC Board of Trustees’ decision to approve, with conditions, the proposed WECC ATEC regional reliability standard. **Exhibit C** contains the record of development for the proposed WECC ATEC regional reliability standard that includes WECC’s approval process prior to submitting the proposed standard to NERC, WECC’s submittal request to NERC for evaluation, NERC’s response and evaluation of the proposed regional reliability standard, and the comments received during the industry-wide comment period NERC held on the proposed WECC standard. **Exhibit D** includes WECC’s standard drafting team roster.

NERC submitted this regional reliability standard for approval with the Federal Energy Regulatory Commission (“FERC”) on July 29, 2008 and is also filing this regional reliability standard with the British Columbia Utilities Commission and the National Energy Board.

II. NOTICES AND COMMUNICATIONS

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

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III. BACKGROUND

a. Regional Reliability Standards Development Procedure

NERC develops reliability standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC *Reliability Standards Development Procedure*, which is incorporated into the Rules of Procedure as Appendix 3A.

Further, Section 311 enables a Regional Entity to develop regional reliability standards that are to be recognized and made part of NERC reliability standards. To do so, a Regional Entity may request NERC to approve a Regional Entity *Reliability Standards Development Procedure*. Included as Exhibit C of the Delegation Agreement between NERC and WECC, notice of WECC’s “Process for Developing and Approving WECC Standards” was filed on December 8, 2006, and was approved by FERC order originally on April 19, 2007¹ and as amended on March 21, 2008.² Section 312.3.1 of the

¹ *Order Accepting ERO Compliance Filing, Accepting ERO/Regional Entity Delegation Agreements, and Accepting Regional Entity 2007 Business Plans*, 116 FERC ¶ 61,060 at P 469.

² *Order Addressing Revised Delegation Agreements*, 122 FERC ¶ 61,245 at P 225.

NERC Rules of Procedure states that “NERC shall rebuttably presume that a regional reliability standard developed, in accordance with a regional reliability standards development process approved by NERC, by a regional Entity organized on an interconnection-wide basis, is just, reasonable, and not unduly discriminatory or preferential, and in the public interest, and consistent with such other applicable standards of governmental authorities.”

Section 312 also establishes other factors for the NERC Board of Trustees to consider in acting on a request to approve proposed regional standards. The Board of Trustees must consider the Regional Entity’s request, NERC’s recommendation for action on the regional reliability standard, any unresolved stakeholder comments, and the Regional Entity’s consideration of the comments in determining whether to approve the regional reliability standard as a NERC reliability standard.³

On August 7, 2007, WECC submitted a request to NERC to approve, and submit to applicable governmental authorities for approval, BAL-004-WECC-01 — Automatic Time Error Correction, the proposed regional reliability standard that is the subject of this filing. WECC developed this standard following its Process for Developing and Approving WECC Standards (“WECC Process”) and therefore, NERC rebuttably presumes it is just, reasonable, and not unduly discriminatory or preferential, and in the public interest. Further, WECC stated and NERC agrees that the proposed WECC ATEC regional reliability standard establishes requirements that are more stringent than, or covers areas not covered by, current NERC reliability standards. Upon receipt of WECC’s request, NERC commenced an evaluation of the regional reliability standard

³ NERC Rules of Procedure at Rule 312.3.1.

and initiated a 45-day public comment period, as prescribed by Section 312 of the NERC Rules of Procedure. WECC responded to the comments presented during the NERC posting and requested NERC to present the WECC ATEC for Board of Trustees approval. During the evaluation, NERC identified shortcomings in the standard that WECC agreed to address by submitting a revised version of the standard for approval by the NERC Board of Trustees within 18 months after approval of the standard by FERC. NERC's evaluation of the proposed regional reliability standard is included in **Exhibit C**. The proposed WECC ATEC regional reliability standard was approved by the NERC Board of Trustees on March 26, 2008 for filing with the Commission and applicable governmental authorities in Canada.

b. Progress in Improving Proposed Reliability Standards

NERC continues to develop new and revised Reliability Standards that address the issues NERC identified in its initial filing of proposed Reliability Standards in April 2006, the concerns noted in the FERC Staff Report issued on May 11, 2006, and the directives FERC included in several orders pertaining to NERC's Reliability Standards. NERC has incorporated these activities into its *Reliability Standards Development Plan: 2008-2010* that was submitted on October 11, 2007. The regional reliability standard proposed for approval is a reliability standard more stringent or covers matters not addressed by NERC's continent-wide Reliability Standard BAL-004-0 – *Time Error Correction* and BAL-006-1 – *Inadvertent Interchange*. Further, the proposed WECC ATEC regional reliability standard addresses a key reliability goal. As a proposed regional standard, it was not subject to review during the initial submission of NERC's

reliability standards. The WECC ATEC regional reliability standard also is described in Volume III of the current version of NERC's standards development plan.

IV. JUSTIFICATION FOR APPROVAL OF PROPOSED RELIABILITY STANDARD

This section summarizes the development of the proposed regional reliability standard and provides evidence that the proposed reliability standard is just, reasonable, not unduly discriminatory or preferential and in the public interest. Further, as a regional standard, the standard is more stringent or covers matters not covered by NERC's existing reliability standards. This section describes the reliability objectives to be achieved by approving the regional reliability standard. The following section describes the stakeholder ballot results and how key issues were considered and addressed by the standard drafting team.

The complete development record for the proposed reliability standard is available in **Exhibit C**. This record includes the WECC approval process prior to submitting the proposed standard to NERC, the comments received during the industry-wide comment period NERC held on the proposed standard, WECC's responses to those comments, the WECC ballot information, WECC's submittal request to NERC for evaluation of the proposed standard, and the NERC evaluation of the proposed standard.

a. Basis and Purpose of BAL-004-WECC-01 — Automatic Time Error Correction

The primary purpose of this regional reliability standard is to reduce the number of time error corrections imposed on the Western Interconnection by requiring Balancing Authorities that operate synchronously to the Western Interconnection to automatically correct for their contribution to time error. The WECC ATEC standard provides the

added market benefit of a superior approach over the current NERC manual time error correction (BAL-004-0 *Time Error Correction*) for assigning costs and providing the equitable payback of inadvertent interchange.

The ATEC procedure has been effective in mitigating three main issues in the Western Interconnection. First, it has been used to reduce manual time error corrections, or the amount of manual adjustments of timing errors that accumulate on clocks, which mark certain interconnection scheduled frequency deviations. Second, since time error is directly related to Inadvertent Interchange, the procedure has been used to reduce accumulated Inadvertent Interchange, or the difference between the actual and scheduled interchange. Third, the WECC ATEC procedure better identifies the Balancing Authorities responsible for Inadvertent Interchange (Time Error) and provides a more equitable short term payback of the Inadvertent Interchange to the Balancing Authorities that should receive it than the current NERC time error correction process in BAL-004-0.

As stated above, the use of the procedure has reduced the number of hours of manual time error correction for the Western Interconnection. In 2003 when WECC implemented ATEC, it also adjusted when a manual time error correction was initiated. Prior to 2003 a manual time error correction was initiated when the time error exceeded 2 seconds; in 2003, that was changed to greater than 5 seconds. The combination of implementing the ATEC procedure and the increase in the amount of accumulated time error prior to implementing a manual time correction have reduced the number of hours of manual time error corrections for the Western Interconnection. Simply increasing the accumulated time error prior to a manual time error correction or just implementing ATEC independently would have reduced the number of manual corrections, but not to

the extent that the combination of the two modifications made in reducing the total number of manual time error corrections. The number of manual time error corrections performed by WECC was 538 in 2000 prior to adopting ATEC as a procedure in WECC. After implementing ATEC in 2003 the number of manual time error corrections performed by WECC was significantly reduced. In 2003, WECC performed 216 manual time error corrections and since then the number has consistently decreased. In 2007, the number of time error corrections performed by WECC was 106. During the time between implementation of the procedure to date the yearly number of manual time error corrections has been reduced as low as 80 (in 2005).

The ATEC procedure effectively reduces the manual time error corrections by requiring Balancing Authorities in the Western Interconnection to determine their contribution to the Interconnection time error. The Balancing Authority does this by calculating its Primary Inadvertent Interchange (“PII”). The BAL-004-WECC-01 standard requires that each Balancing Authority calculate its PII from its hourly Inadvertent Interchange and feed the resulting PII into its ACE equation to continuously correct for its portion of the time error automatically as opposed to manually as specified in the continent-wide standard on Time Error Correction BAL-004-0. Although the maximum payback is bounded between limits, the continuous correction enables equitable payback of Inadvertent Interchange and in a timeframe closely related to the time the inadvertent interchange was accumulated in the first instance.

As defined in Section 312.1 of the NERC Rules of Procedure, “Regional entities may propose regional reliability standards that set more stringent reliability requirements than the NERC reliability standard or cover matter not covered by an existing NERC

reliability standard.” This proposed WECC regional standard is justified on the basis that the standard requirements cover topics not currently covered by or presents a requirement more stringent than current NERC reliability standards. Whereas, NERC Reliability Standard BAL-004-0 — *Time Error Correction* provides for time error correction to be implemented manually, and BAL-006-1 — *Inadvertent Interchange* provides for capture of inadvertent interchange hourly, the proposed WECC reliability standard provides for *automatic* correction of time error using a more refined primary inadvertent interchange term than included in the NERC standard. As such, the proposed regional standard is more stringent and covers matters not in the NERC standards.

Automatic Time Error Correction has been a regional reliability practice in WECC since 2003, effectively reducing manual time error corrections, reducing the number of hours of manual time error correction for the Western Interconnection, and reducing the accumulated Inadvertent Interchange in the Western Interconnection since 2003.

WECC requests approval of this regional standard as mandatory and enforceable to:

- Ensure that Automatic Time Error Correction is an enforceable mandatory standard in the Western Interconnection
- Reduce the number of manual time error corrections
- Ensure continuous and equitable payback of accumulated Inadvertent Interchange between Balancing Authorities in the Western Interconnection
- Eliminate the need for accounting process and transmission allocation associated with bilateral inadvertent paybacks
- Ensure participation from all Balancing Authorities (BA) in the Western Interconnection
- Ensure that the BA causing the time error is responsible for correcting the error within a given amount of time.

NERC agrees that the proposed regional standard meets the threshold for approval as a regional reliability standard and serves a valuable reliability purpose.

The proposed regional reliability standard introduces three new definitions: Automatic Time Error Correction, Primary Inadvertent Interchange, and Secondary Inadvertent Interchange. Further, this regional reliability standard proposes four requirements, three of which are not covered BAL-004-0, Time Error Correction and one of which is more stringent than Requirement R1 in the FERC-approved BAL-006-1 – Inadvertent Interchange. The four requirements that this regional reliability standard proposes are summarized as follows:

Requirement R1. Based on the ATEC methodology, this requirement is necessary to ensure that all Balancing Authorities continuously participate in Automatic Time Error Correction through their Automatic Generation Control (AGC) systems. The sub-requirement (R1.1) limits the payback amount to minimize any Control Performance Standard 2 (CPS2)⁴ violations for Balancing Authorities with large Frequency Bias settings, while R1.2. addresses actions for cases when invalidated implementation of the ATEC methodology occurs and requires adjustments.

Requirement R2. Ensures that all Balancing Authorities continuously operate to ATEC to avoid large accumulation of Inadvertent Interchanges, limits the Balancing Authorities' use of other modes than ATEC to a maximum of 24 hours per calendar quarter, and requires that the Balancing Authority notifies all other Balancing Authorities in the Interconnection when it does operate out of ATEC.

Requirement R3. Requires Balancing Authorities to and ensures that have the capability to switch between different AGC operating modes in case of islanding or loss of frequency telemetry.

Requirement R4. Requires Balancing Authorities to calculate and record hourly Inadvertent Interchange and to calculate their Primary Inadvertent Interchange component. This requirement is more stringent than NERC

⁴ NERC Glossary of Terms

Control Performance Standard (CPS): The reliability standard that sets the limits of a Balancing Authority's Area Control Error over a specified time period.

Reliability Standard BAL-006-1 Requirement R1 that requires Balancing Authorities to calculate and record hourly Interchange.

Demonstration that the proposed reliability standard is just, reasonable, not unduly discriminatory or preferential and in the public interest

The discussion below explains how the proposed regional reliability standard has met or exceeded the criteria for demonstrating that the proposed reliability standard is just, reasonable, not unduly discriminatory or preferential and in the public interest:

1. The proposed reliability standard is designed to achieve a specified reliability goal.

Proposed reliability standard BAL-004-WECC-01 — Automatic Time Error Correction is designed to achieve the specific reliability goal of reducing manual time error corrections by ensuring continuous and automatic reduction in time error and accumulated Inadvertent Interchange in the Western Interconnection. The WECC Performance Working Group (“PWG”) reviewed issues regarding manual time error procedure and criterion. During this review the PWG identified several root causes for time error including errors in frequency and net interchange measurement; errors in schedules; inadequate control system or telecommunications; and energy conversion units responsive to Automatic Generation Control (“AGC”).

PWG recommended developing an automatic time error correction standard that would mitigate the root causes of time error. Therefore, it recommended the development of the BAL-STD-004-1 (now BAL-004-WECC-01) ATEC. The basic refinement to the ACE equation is to include the ATEC term in the Net Scheduled Interchange term in the ACE equation. The proposed standard requires Balancing Authorities (“BA”) in the Western Interconnection to utilize ATEC continuously in their

AGC system. Requirement R1 in BAL-004-WECC-01 requires that all Balancing Authorities continuously participate in Automatic Time Error Correction through their AGC systems. Requirement R1 in BAL-004-WECC-01 is not covered in the current NERC standard BAL-004-0 Time Error Correction.

2. The proposed reliability standard contains a technically sound method to achieve the goal.

The regional reliability standard contains a technically sound method to achieve the goal of reducing the number of manual time error corrections. Using the ACE equation in Requirement R1 in NERC's BAL-001-0 — Real Power Balancing Control Performance reliability standard as the basis, WECC expands upon the equation by refining the ACE equation to include the ATEC term in the Net Scheduled Interchange term in the ACE equation. The ATEC term accounts for the Balancing Authority's accumulated PII in Requirement R1 in BAL-004-WECC-01. PII determines the Balancing Authority's contribution to the Interconnection time error. Once the PII is determined on an hourly basis after checkout according to Requirement R4, it is fed back into the Balancing Authority's ACE equation to continuously correct for its portion of the time error. Requirement R1 of BAL-004-WECC-01 requires Balancing Authorities that operate synchronously to the Western Interconnection to continuously utilize ATEC in their AGC system. This requirement is not covered by NERC's standard BAL-004-0 — Time Error Correction.

Requirement R2 in BAL-004-WECC-01 requires all Balancing Authorities to continuously operate to ATEC to avoid large accumulation of Inadvertent Interchange. In addition, R2 limits a Balancing Authority's ATEC suspension to a maximum of 24 hours per calendar quarter and requires that on suspension the Balancing Authority

notifies all other Balancing Authorities in the Interconnection. This requirement, R2, is not covered by NERC's standard BAL-004-0 Time Error Correction.

Requirement R3 in BAL-004-WECC-01 requires that Balancing Authorities are able to change their AGC 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). This requirement, R3, is not covered by NERC's standard BAL-004-0 Time Error Correction.

Requirement R4 in BAL-004-WECC-01 requires Balancing Authorities to calculate hourly Primary Inadvertent Interchange when hourly checkout is complete. Requirement R1 in NERC's standard BAL-006-1 Inadvertent Interchange requires each Balancing Authority to calculate and record hourly Inadvertent Interchange. Therefore, Requirement R4 in BAL-004-WECC-01 is more stringent than Requirement R1 in NERC's standard BAL-006-1.

The WECC Operating Committee indicated strong support for the standard. The WECC approach was implemented as a procedure in 2003. During this time no significant threats to reliability have been identified. In fact, the WECC ATEC standard has proven measurable and very effective.

3. The proposed reliability standard is applicable to users, owners, and operators of the bulk power system, and not others.

The proposed regional reliability standard is applicable only to users, owners and operators of the bulk power system located within WECC, and not others. The proposed regional standard identifies applicable entities as Balancing Authorities that operate

synchronously to the Western Interconnection.⁵ The requirements ensure that only the Balancing Authorities that operate synchronously in the Western Interconnection causing the time error events in WECC are responsible for correcting the errors, and making such corrections within a specific allotment of time. As stated previously, Requirement R1 requires these Balancing Authorities are continuously participating in ATEC through their AGC system. Furthermore, Requirement R2 limits the suspension of ATEC to a maximum of 24 hours per calendar quarter. No other Balancing Authorities outside of WECC, or other functional entities within WECC, are required to comply with the requirements in this proposed regional standard.

4. The proposed reliability standard is clear and unambiguous as to what is required and who is required to comply.

The proposed regional reliability standard applies to Balancing Authorities that operate synchronously to the Western Interconnection. NERC, working with the WECC Regional Entity, will use NERC's registration process to identify the specific entities that are required to comply with this proposed reliability standard. These entities will explicitly be identified in NERC's Compliance Registry to ensure the obligation to comply is formally identified, documented, and acknowledged. The proposed reliability standard requirements are clear and unambiguous as to what is expected from applicable entities. The proposed reliability standard has four requirements, which include sub-requirements, which set forth the Balancing Authorities' obligations. Requirements one through four apply to Balancing Authorities and require that they continuously participate in Automatic Time Error Correction through their AGC systems; utilize ATEC to avoid large accumulation of Primary Inadvertent Interchange; are able to switch between AGC

⁵ WECC states that there are 35 Balancing Authorities that operate within its footprint.

operating modes in the case of islanding or loss of frequency telemetry; and calculate and record both hourly inadvertent interchange and their Primary Inadvertent Interchange component.

5. The proposed reliability standard includes clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.

The proposed reliability standard includes a violation risk factor for each main requirement in the reliability standard. The proposed regional reliability standard is not specific in assigning violation severity levels to each requirement; however, it does propose general violation severity levels. The general violation severity levels provide clear and understandable consequences for each of the main requirements. Thus, NERC proposes to utilize these violation severity levels in the interim until requirement-specific violation severity levels are developed. WECC has agreed to submit to NERC a revised standard that includes violation severity levels associated with each requirement within 18 months of FERC approval.

6. The proposed reliability standard identifies clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner.

Each requirement in the proposed reliability standard is supported by a measure that clearly identifies what is required and how the requirement will be enforced. These four measures, with sub-requirements, will ensure the requirements are clearly administered for enforcement in a consistent manner and without prejudice to any party. These four measures are included in Section C of the proposed reliability standard. Furthermore, to guide the compliance monitoring processes, NERC will develop a reliability standard audit worksheet (“RSAW”) for this proposed reliability standard if it

includes the reliability standard, once approved, in the list of actively monitored reliability standards for a particular compliance program year. As these RSAWs are guides, they assist the applicable entity in understanding what it is expected to provide in support of the particular measures to demonstrate compliance.

7. The proposed reliability standard achieves the reliability goal effectively and efficiently.

The proposed reliability standard helps the industry achieve the stated reliability goal effectively and efficiently. As discussed in Section IV.a of this filing, the Commission in Order No. 693 stated that Automatic Time Error Correction is an effective procedure for minimizing Inadvertent Interchange. The WECC ATEC standard is a superior approach to the manual time error correction process, because it reduces the number of time error corrections imposed on the Western Interconnection but also provides an added market benefit of assigning equitable payback of inadvertent interchange.

In addition, the WECC ATEC standard is more stringent than the manual procedure currently in the continent-wide standard BAL-004-0 — Time Error Correction since the ATEC standard is designed to ensure continuous and automatic reduction in time error and accumulated Inadvertent Interchange in the Western Interconnection.

ATEC has proven to be an effective tool for controlling time error in WECC. The WECC process is objective, centrally managed, and understood by all participants. ATEC was implemented as a procedure in 2003 voluntarily in WECC. Since 2003 WECC has proactively adjusted the procedure to yield improvements in performance and eliminate any observed impacts to CPS and frequency as a result of implementation of ATEC. WECC addressed ATEC impacts to CPS by adjusting the payback limit. These

adjustments proved effective such that Balancing Authorities in WECC no longer experienced CPS violations. In fact, Bonneville Power Administration (“BPA”) compared its CPS1 score for July and December 2007 with and without the ATEC term in the ACE equation. For July 2007, CPS1 without the ATEC term was 194% (the present NERC CPS1 standard) and 197% with the ATEC term. For December 2007, CPS1 without the ATEC term was 188% and 189% with the ATEC term. Compliance with the present NERC CPS standard is 100%.⁶ Present Balancing Authority CPS1 scores in the Western Interconnection are generally well above the 100% minimum NERC requirement. Based upon the BPA findings and the fact Balancing Authorities are generally well above 100% in CPS1 scores, it is very unlikely there would be any negative impact to reliability, much less a significant threat, by adding the ATEC term to the ACE equation.

Finally, WECC received comments that additional refinements could be made in implementing its ATEC term in its ACE equation. In order to do so would require each of its 35 Balancing Authorities to make changes to its AGC application. In its experience using the ATEC methodology since 2003, WECC has not seen an appreciable change in its CPS scores indicating a lesser amount of control than previously experienced. While technically accurate, the suggested refinement to the AGC would therefore not expect to result in a demonstrable increase in reliability in terms of control. Therefore, WECC elected not to pursue implementation of this recommendation on the basis that the cost to implement, estimated in excess of \$1 million, exceeded the benefit derived. This further

⁶ Per Measure M1 in BAL-001-0a, “Each Balancing Authority shall achieve, as a minimum, Requirement 1 (CPS1) compliance of 100%” where $CPS1 = (2 - CF) * 100\%$. CF is a frequency-related compliance factor and is a ratio of one-minute compliance parameters accumulated over 12 months divided by the target frequency bound that is desired to be a value much less than 1. Therefore, it is acceptable and desired that a balancing authority achieve CPS1 scores well over 100%.

exemplifies that this proposed regional reliability standard represents a cost-effective approach.

8. The proposed reliability standard does not reflect the “lowest common denominator.”

This proposed reliability standard does not reflect a “lowest common denominator” approach. In fact, the proposed regional reliability standard presents a superior approach to time error correction for the Western Interconnection. The proposed reliability standard covers areas not covered in the NERC standard BAL-004-0 — Time Error Correction. Requirement R1, Requirement R2 and Requirement R3 in BAL-004-WECC-01 require Balancing Authorities to utilize and operate to ATEC continuously while maintaining flexibility in AGC to switch modes of operation in the case of islanding or loss of frequency. These three requirements are currently not covered in NERC’s standard BAL-004-0 — Time Error Correction which employs a manual time error correction method. In addition, Requirement R4 of the WECC ATEC standard requires Balancing Authorities to calculate their Primary Inadvertent Interchange component. Requirement R4 is more stringent than NERC Standard BAL-006-1 Requirement R1 that requires Balancing Authorities to calculate Inadvertent Interchange whereas the proposed Requirement R4 requires Balancing Authorities to calculate its primary inadvertent interchange.

In summary, the WECC ATEC standard does not reflect a “lowest common denominator” approach to the standard. By it being a regional standard, one threshold is that the standard be more stringent than NERC continent-wide requirements. WECC’s proposed regional standard is more stringent than NERC’s continent-wide standard and therefore cannot reflect a lowest common denominator approach

The WECC ATEC method has proven effective and support for the WECC ATEC Standard has been strong with the WECC Operating Committee voting 38 in favor with one no vote and five abstentions and with the WECC Board of Directors ballot voting 28 to zero in favor of the standard.

9. The proposed reliability standard will apply equally to all applicable entities in a consistent manner and will impose no new cost burdens on entities.

The proposed reliability standard will apply equally to all applicable entities in a consistent manner. The record of development (**Exhibit C**) demonstrates that no stakeholder offered comments in the public comment period that pertained to cost impact of the standard relative to the size of the entity. In addition, during the WECC process no such comment was received that expressed concern on the part of smaller entities. Further, the vital public interest in effectively managing time error correction and inadvertent interchange means that considerations for costs potentially incurred by any entity, regardless of size, should be given much lesser weight in determining if a standard on this topic should be approved. Upon approval of the reliability standard and once identified as an applicable entity, all designated entities must comply with this proposed reliability standard. Moreover, as the proposed standard has been in practice in WECC since 2003, the proposed standard imposes no new cost burdens on entities.

10. The proposed reliability standard is designed to apply throughout North America to the maximum extent achievable with a single reliability standard while not favoring one area or approach.

A reliability standard proposed by a Regional Entity must meet the same standards that NERC's reliability standards must meet, *i.e.*, the regional reliability standard must be shown to be just, reasonable, not unduly discriminatory or preferential, and in the public

interest. The WECC ATEC Standard meets the criteria for regional Standards by covering matters not covered by a NERC standard. Requirements R1, R2 and R3 in BAL-004-WECC-01 are all not covered by NERC's BAL-004-0 — Time Error Correction. Requirement 4 in BAL-004-WECC-01 is more stringent than Requirement R1 in NERC's BAL-006-1 — Inadvertent Interchange. NERC has also included the consideration of automatic time error correction in Project 2007-05 – Balancing Authority Controls as part of a future continent-wide reliability standard.

11. The proposed reliability standard causes no undue negative effect on competition or restriction of the grid.

The WECC ATEC Standard does not pose any serious threat to public health, safety, welfare, national security or the reliability of the Western Interconnection. The proposed regional standard does not restrict the available transmission capability or impact the commercial use of the grid. The WECC ATEC procedure as proposed in this standard has been utilized in practice voluntarily by WECC Balancing Authorities since 2003. In practice the WECC ATEC standard has proven effective in reducing manual time error corrections and accumulated Inadvertent Interchange. The procedure requires that Balancing Authorities calculate their Primary Inadvertent Interchange and feed the resulting PII into the ACE equation to continuously correct for its portion of the time error automatically. The WECC ATEC standard provides the added market benefit of a superior approach over manual time error correction for assigning costs and providing the equitable payback of inadvertent interchange. Since the standard has been in practice since 2003 voluntarily approval of this standard will have no direct impacts on current practice in the Western Interconnection. This proposed standard will perpetuate a practice that has served to prevent a non-normal operating mode from being more

pervasive. The proposed standard does not necessarily restrict grid usage on a commercial level but it does eliminate some period of time of being in a non-normal state at the operating level.

12. The implementation time for the proposed reliability standard is reasonable.

The implementation plan for the proposed reliability standard indicates that the reliability standard is to become effective the first day of the quarter after regulatory approval by FERC. The proposed standard has been in practice voluntarily in the Western Interconnection since 2003 and approval of this standard will have no direct impacts on current practice in the Western Interconnection.

13. The reliability standard development process is open and fair.

WECC and the drafting team followed the Process for Developing and Approving WECC Standards, which is a fair and open process that was approved by the Commission for developing regional reliability standards. As part of this process, the standard drafting team posted the standard twice on the WECC Website for public comment. Comments to these posting were due January 23, 2007 and May 11, 2007. The drafting team posted the ATEC for two additional 30-day comment periods before WECC's Operating Committee and Board of Directors conducted ballots of the standard. WECC followed its process for developing this proposed regional standard and demonstrated consensus through a ballot of its Operating Committee and Board of Directors. In addition, NERC noticed on its public website that WECC was developing the ATEC standard and in accord with the Rules of Procedure, NERC satisfied its procedural requirements for regional standard development and approval. This included providing an evaluation of the proposed regional standard, posting for a 45-day industry comment

period, forwarding comments to WECC for response, considering WECC's response to these comments to determine if the comments were resolved, and making a recommendation to the Board of Trustees for approval.

14. The proposed reliability standard balances with other vital public interests.

NERC and WECC do not believe there are competing public interests with respect to the request for approval of this proposed standard. The proposed standard was developed using a fair and open process that included public postings of the proposed standard during which time no comments were received that indicated the proposed standard conflicted with other vital public interests. Furthermore, since these practices have been in place voluntarily since 2003 without concerns of competing interests, the proposed standard, when approved, will likewise cause no concerns to be raised from competing interests.

V. SUMMARY OF THE RELIABILITY STANDARD DEVELOPMENT PROCEEDINGS

a. Development History

In November 2006, WECC posted for initial industry comment the initial draft of the proposed standard. The drafting team reviewed and responded to initial comments in January 2007. During the first comment period WECC made conforming changes to the standard to improve the technical clarity of the standard based on input from the industry. Included in the improvements to the standard WECC clarified that the term "H" (the number of hours used to payback Inadvertent Interchange) in Requirement R1 and assigned it a value. WECC adequately addressed all issues and provided responses to comments during this initial comment period.

In April 2007, the drafting team posted a second draft of the proposed standard for comment. During the second comment period WECC received technical comments and several clarifying comments on the proposed reliability standard. The technical comments identified that the L_{\max} as defined in the WECC ATEC standard is too restrictive. WECC replied that the limit on the hourly automatic payback on Inadvertent Energy set to less than L_{10} limits the risk of CPS2 violations for Balancing Authorities due to large Inadvertent Energy offsets in their hourly ACE equation. WECC adequately provided responses to the other technical comment received during this posting. Lastly, WECC made conforming changes to the standard to improve the clarity of the standard as suggested by the comments.

In May 2007, the drafting team posted the third draft for approval by WECC's Operating Committee. The WECC Operating Committee balloted the proposed standard in June 2007. Support for the WECC ATEC Standard has been strong with the WECC Operating Committee voting 38 in favor with one no vote and five abstentions. The WECC Board of Directors balloted the proposed standard in July 2007, voting unanimously 28-0 in favor of the standard.

In accordance with NERC's Rules of Procedure for proposed regional reliability standards, WECC submitted the proposed ATEC regional standard to NERC in August, 2007. NERC evaluated the WECC ATEC standard and identified several opportunities to provide additional clarification within the standard. NERC identified that the WECC ATEC standard did not include all necessary compliance elements consistent with NERC's Reliability Standards. More specifically, the violation severity levels and time horizons were not assigned to each requirement in the WECC standard. NERC submitted

its findings to WECC on August 21, 2007. NERC's recommendations are included in Exhibit C of this filing. WECC agrees to make the changes suggested by NERC within 18 months of regulatory approval.

NERC posted the WECC ATEC regional standard for a 45-day public comment period from September 21, 2007 through November 5, 2007. There were two sets of comments that were forward to WECC for response, one from a representative from Bonneville Power Administration (Transmission Owners segment), and another from Energy Mark, Inc. (Small Electricity Users segment). **Exhibit C** of this filing contains the record of development of the proposed reliability standard including the comments received during the public posting of the proposed standard. The specific nature of these comments and WECC's response to them are discussed in the Key Issues section that follows this discussion.

The Automatic Time Error Correction Standard drafting team submitted to NERC its Consideration of Comments on January 2, 2008. After reviewing the consideration of comments and at the request of the NERC staff, WECC provided a refined consideration of comments and a summary of the main issues.

The WECC Automatic Time Error Correction Standard was presented for and conditionally approved by the NERC Board of Trustees on March 26, 2008. **Exhibit B** of this filing contains the NERC Board of Trustees' decision on the WECC regional Reliability Standard.

b. Key Issues

During the development of the proposed regional reliability standard a potential issue was raised related to the negative impact of ATEC on NERC CPS control. As a

result of this concern, WECC provided a refined Consideration of Comments report to more specifically address the issues offered by the commenters.

Comments Regarding Reliability Concerns

During the NERC posting of the WECC ATEC standard, one commenter submitted comments and a technical paper titled “Comments on the WECC Auto Time Error Correction Method” that criticized BAL-004-WECC-01 and identified the following main concerns:

1. The WECC ATEC Method uses intentionally imbalanced interchange schedules to correct time error without adjusting the scheduled interconnection frequency. The failure to have balanced interchange schedules is the first condition that causes the WECC ATEC Method to fail to comply with the necessary conditions to maintain the integrity of the Control Performance Standard 1 (CPS1) criteria.
2. The hidden adjustment in scheduled frequency caused by the imbalanced interchange schedules is the second condition that causes the WECC ATEC Method to fail to maintain the integrity of the CPS1 criteria.
3. The WECC Automatic Time Error Correction Standard as currently written poses a serious threat to the reliability of the interconnection.

Upon consideration of these comments, the WECC Performance Work Group and the drafting team for the WECC ATEC standard, respectfully disagreed with the commenter’s assertions that BAL-004-WECC-01 does not maintain the integrity of the CPS1 criteria and that it poses a serious threat to the reliability of the interconnection. In its response, while WECC acknowledges that the commenter’s technical argument has

merit, it states that the increase in variability of CPS1 measurement is still well within the threshold defined by NERC's reliability standard BAL-001-0 – Real Power Balancing Control Performance. The WECC ATEC standard contains the same the calculation of PII, the amount of payback, and the timing of the payback as the methodology proposed by the commenter. Since there are no changes in the payback amounts, the only difference between the two methods is a very slight variability in the calculation of CPS1. These thresholds were defined based on many years of operating experience and data collection and determined to be a reasonable threshold for measuring a Balancing Authority's performance in balancing its resources and demand. Further, to implement the commenter's approach fully would require AGC changes by each WECC balancing authority at a potential cost in excess of \$1 million total for a marginal increase in reliability. WECC therefore believes that this approach as proposed is a responsible cost-efficient approach that has been proven through practice to work effectively. The details of WECC's replies are found Exhibit C to this filing.

The commenter offers another approach for the measurement of CPS. However, when WECC weighs the slight loss of precision in CPS scores against the benefit of fewer manual time error corrections, the impact is not considered a *threat* to reliability, as empirical data from the use of this procedure over the past four years demonstrates. The WECC ATEC Standard may have a minor impact in calculated CPS and frequency within a one-hour timeframe, but this is a reasonable tradeoff of one reliability objective for another. For example, CPS affords certain tolerance/leniency, while paying back inadvertent does not. On the one hand, Balancing Authorities can face an intolerance associated with paying back accumulated inadvertent interchange. On the other hand,

Balancing Authorities can experience smaller inadvertent balances and fewer manual time error corrections. Based upon findings from a BPA comparison and the fact Balancing Authorities are generally well above 100% CPS, it is very unlikely there would be any significant threat to reliability by adding the ATEC term to the ACE equation.

In summary, while the commenter's comments are technically valid, the WECC ATEC procedure as proposed does not represent a threat to reliability in the Western Interconnection and is a cost-responsible means to reduce the number of manual time error corrections and payback primary inadvertent interchange from one hour during subsequent hours, thus more closely relating the payback to the time it was generated.

VI. CONCLUSION

For the reasons stated above, NERC respectfully requests approval of the regional reliability standard BAL-004-WECC-01 — Automatic Time Error Correction.

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Exhibit A

**Reliability Standard, BAL-004-WECC-01 — Automatic Time Error
Correction, Submitted for Approval**

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:

Completed Actions	Completion Date
1. Post Draft Standard for initial industry comments	November, 2006
2. Drafting Team to review and respond to initial industry comments	January, 2007
3. Drafting Team posted a second draft for industry comments	March, 2007
4. Drafting Team posted a revised second draft for industry comments	April, 2007
5. Drafting Team posted a third draft for Operating Committee approval	May, 2007
6. WECC Operating Committee ballots proposed standard	June, 2007
7. Drafting Team posted the ATEC Standard for Board approval	June, 2007
8. WECC Board of directors ballots proposed standard	July, 2007

Description of Current Draft:

The Automatic Time Error Correction (ATEC) component is now included in the NI_s term instead of as a separate term in the ACE equation. This only changes the order of the terms in the ATEC ACE equation, not the calculated ACE.

Future Development Plan:

Anticipated Actions	Anticipated Date
1. WECC submits ATEC Standard to NERC for posting	August, 2007
2. August NERC posts the ATEC Standard for 45 days	August, 2007
3. October NERC Board approval requested	October, 2007

Definitions of Terms Used in 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 Glossary.

Automatic Time Error Correction: A frequency control automatic action that a Balancing Authority uses to offset its frequency contribution to support the Interconnection's scheduled frequency.

Primary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of the area (n).

Secondary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of area (i).

A. Introduction

Title: Automatic Time Error Correction

Number: BAL-004-WECC-01

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

Applicability:

1. Balancing Authorities (BA) that operate synchronously to the Western Interconnection.

Effective Date: On the first day of the first quarter, after applicable regulatory approval.

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).

$$NI'_S = NI_S - \frac{\Pi_{Primary}^{on/off\ peak}}{(1 - Y) * H}$$

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).

$\Pi_{primary}^{on/off\ peak}$ = is the Balancing Authority's accumulated primary inadvertent interchange in MWh. An On-Peak and Off-Peak accumulation accounting is required.

Where:

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

Π_{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:

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

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:

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

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

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

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]

R3. BAs in the Western Interconnection shall be able to change their AGC operating mode between Flat Frequency (for blackout restoration); Flat Tie Line (for loss of frequency telemetry); Tie Line Bias; Tie Line Bias plus Time Error control (used in ATEC mode). The ACE used for NERC reports shall be the same ACE as the AGC operating mode in use. [Risk Factor: Lower]

R4. Regardless of the AGC operating mode each BA in the Western Interconnection shall compute its hourly Primary Inadvertent Interchange when hourly checkout is complete. If hourly checkout is not complete by 50 minutes after the hour, compute Primary Inadvertent Interchange with best available data. This hourly value shall be added to the appropriate accumulated Primary Inadvertent Interchange balance for either On-Peak or Off-Peak periods. [Risk Factor: Lower]

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 Inadvertent Interchange shall be added to the appropriate On- or Off-Peak accumulated Primary Inadvertent Interchange.

- 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 Interchange, unless such adjustments can be pinpointed to specific hours in which case R4.2 applies.
- 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 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 for the preceding calendar year (January – December) plus the current 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.

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

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

1.3. 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.

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

Exhibit B

**The NERC Board of Trustees' Decision on the WECC Regional Reliability
Standard**

Reliability Standards

Board Action Required

Approve reliability standards in the following areas:

- a. BAL-004-1 — Time Error Correction Standard — **Approve**
- b. Regional Standard: BAL-004-WECC-01 Automatic Time Error Correction — **Approve with conditions**
- c. Interpretation of Requirement R4 — VAR-001-1 — **Approve**

Information

The Reliability Standards Program is responsible for all aspects of NERC's Reliability Standards, including: developing and maintaining reliability standards; the reliability standards development process; and the review of proposed regional standards. This program also has primary responsibility for managing NERC's relationship with the North American Energy Standards Board, which develops business practice standards and communications protocols for electric and gas wholesale and retail market participants. Additionally, the Reliability Standards Program makes recommendations to the Training, Education, and Personnel Certification Program for the development and implementation of educational activities and programs to promote understanding and compliance with reliability standards. The standards program relies heavily on the active involvement of industry subject matter experts to both recommend and assist in the development of reliability standards.

a. BAL-004-1 — Time Error Correction

Action: BAL-004-1 — Time Error Correction Standard — Approve

Supplemental Information – March 26, 2008: The NERC Board deferred action on this proposed standard at its February 12, 2008 meeting. At that time, the Board decided to await the approval of the Operating Committee *Time Monitoring Reference Document* and a letter from the Midwest ISO regarding its commitment to continue as the Interconnection Time Monitor for the Eastern Interconnection.

To that end, at its March 12, 2008 meeting, the Operating Committee approved the *Time Monitoring Reference Document*, included as Attachment A1. This document outlines the responsibilities of reliability coordinators serving as time monitors for the North American interconnections and includes that:

- There will be one time monitor within each interconnection, nominated by the Operating Reliability Subcommittee, accepted by the Operating Committee, and proposed for approval by the NERC Board of Trustees;
- The term of each time monitor is three years with automatic renewal unless notified to the contrary at least six months in advance;
- The Operating Reliability Subcommittee will work with a time monitor that fails to fulfill its responsibilities to resolve the problem;

- The Reliability Subcommittee will report any frequency or time error issues caused by or aggravated by time error practices or the time monitor to the Operating Committee;
- The time monitor will initiate and terminate time error corrections as outlined in NERC standards and NAESB business practices;
- The time monitor will terminate any time error corrections negatively impacting reliability; and,
- The time monitor will provide accumulated time error following each correction or at least monthly to the balancing authorities within its interconnection.

Also, the Midwest ISO sent a letter on March 11, 2008 that stated:

- Midwest ISO will continue to voluntarily serve as the Eastern Interconnection time monitor under the provision that NERC will not assess a penalty to Midwest ISO for failure to implement the current standard requirements for properly monitoring time error or for initiating a time error correction. NERC has previously provided this assurance in a May, 2007 letter.
- Assuming the proposed standard as drafted is approved by the Commission, Midwest ISO will continue to voluntarily serve as the time monitor for the Eastern Interconnection.
- In the event the proposed standard is not approved by the Commission or an alternate version that places additional requirements and potential compliance risks is approved by the Commission, the Midwest ISO will reevaluate whether it can continue to volunteer to provide this service.

The Midwest ISO letter is included as Attachment A2. NERC will develop a long-term solution to the issue of time error correction in its *Reliability Standard Development Plan: 2008-2010*, Project 2007-05 – Balancing Authority Controls.

Based on the foregoing information, NERC recommends that the Board approve the BAL-004-1 - Time Error Correction reliability standard and direct staff to file the reliability standard with FERC and applicable governmental authorities in Canada.

Background (provided for February 12, 2008 Board meeting): On July 11, 2007, the NERC Operating Committee (OC) submitted to the Standards Committee a standards authorization request (SAR) and proposed red-lined changes to [BAL-004-0 — Time Error Correction](#) reliability standard Requirements R1 and R2. The stated purpose of this standard is “to ensure that time error corrections are conducted in a manner that does not adversely impact the reliability of the Interconnection.” In the SAR, the NERC OC requested the use of the Urgent Action process to effect the proposed revisions. The purpose of the SAR is to:

1. Remove inappropriate compliance requirements on reliability coordinators who voluntarily agree to serve as Interconnection Time Monitors;
2. Remove inappropriate compliance requirements on the NERC Operating Committee, which is not a user, owner, or operator; and
3. Remove inappropriate requirements to follow the North American Energy Standards Board (NAESB) business practices.

The proposal ensures that the reliability coordinators continue to voluntarily agree to serve as Interconnection Time Monitors. The NERC OC would continue to approve the Interconnection Time Monitors and review their performance, but not via a standard with its attendant

compliance requirements and possible sanctions. Otherwise, as stated in the SAR, it is likely that one or more reliability coordinators may no longer voluntarily agree to perform the service.

Currently, the requirements in BAL-004-0 — Time Error Correction states:

BAL-004-0 — Time Error Correction

R1. Only a Reliability Coordinator shall be eligible to act as Interconnection Time Monitor. A single Reliability Coordinator in each Interconnection shall be designated by the NERC Operating Committee to serve as Interconnection Time Monitor.

R2. The Interconnection Time Monitor shall monitor Time Error and shall initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.

R3. Each Balancing Authority, when requested, shall participate in a Time Error Correction by one of the following methods:

R3.1. The Balancing Authority shall offset its frequency schedule by 0.02 Hertz, leaving the Frequency Bias Setting normal; or

R3.2. The Balancing Authority shall offset its Net Interchange Schedule (MW) by an amount equal to the computed bias contribution during a 0.02 Hertz Frequency Deviation (i.e. 20% of the Frequency Bias Setting).

R4. Any Reliability Coordinator in an Interconnection shall have the authority to request the Interconnection Time Monitor to terminate a Time Error Correction in progress, or a scheduled Time Error Correction that has not begun, for reliability considerations.

R4.1. Balancing Authorities that have reliability concerns with the execution of a Time Error Correction shall notify their Reliability Coordinator and request the termination of a Time Error Correction in progress.

The SAR and red-lined standard proposed the following revisions to Requirements R1 and R2:

BAL-004-1 — Time Error Correction

R1. Only a Reliability Coordinator shall be eligible to act as Interconnection Time Monitor. ~~A single Reliability Coordinator in each Interconnection shall be designated by the NERC Operating Committee to serve as Interconnection Time Monitor.~~

R2. ~~The Interconnection Time Monitor shall monitor Time Error and shall initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.~~

The Requirement R1 change removes the obligation for the NERC Operating Committee to designate an entity to serve as the Interconnection Time Monitor since is not a bulk power system owner, operator, or user of the bulk power system.

The deletion of Requirement R2 serves two purposes. First, under the former Operating Policy that addressed time error correction prior to the implementation of the Version 0 standards, an entity volunteered to serve as the interconnection time monitor. After the translation to the

Version 0 reliability standards, and now that these standards are mandatory and enforceable, the voluntary role of Interconnection Time Monitor was converted to a role that contains the risk of penalty for noncompliance. Entities currently serving in this capacity today, and those reliability coordinators that could serve in the future, have indicated they may choose not to serve in this role unless the threat of financial penalties is removed. Secondly, the requirement directs the entity serving as the Interconnection Time Monitor to implement time error corrections in accordance with a NAESB procedure. The prevailing opinion of the requester is that it is not appropriate for a reliability standard to compel an entity to comply with NAESB business practices.

At its September 11, 2007 meeting, the Standards Committee approved the posting of the SAR and proposed standard changes using the Urgent Action process. As a result of this action, the SAR and proposed standard were posted for a 30-day pre-ballot window from September 17–October 18, 2007. NERC conducted an initial ballot from October 18–29, 2007 and achieved a quorum of 96.18 percent. The ballot included seven negative ballots with a comment, initiating the need to conduct a recirculation ballot. Some balloters listed more than one reason for submitting a negative ballot:

- All seven balloters who submitted a negative ballot with a comment indicated that the revisions left unclear what entity will assume the responsibility for serving as the time monitor for each interconnection.
- Three balloters indicated that the revisions left unstated the responsibility for directing the implementation of a time error correction.
- Two balloters indicated that reliability standards should include requirements to comply with NAESB business practices because the NAESB business practice is also FERC-approved.
- One balloter suggested revising Requirement R2 to omit the reference to the NAESB business practice
- One balloter disagreed with the use of the Urgent Action Process.

In response to these comments, the NERC Operating Committee indicated that it is working on a documented process for identifying what entity will serve as the Interconnection Time Monitor for each interconnection and for reviewing the performance of the Interconnection Time Monitor on a forward-basis as it has done for many years. In practice, Interconnection Time Monitors have been very diligent in carrying out their responsibilities in this regard.

NERC posted the response to the comments and conducted a recirculation ballot from November 16–December 4, 2007. The revised standard passed with 97.45 percent of the 157 ballot pool participants voting resulting in a weighted segment approval of 94.10 percent.

Between the initial ballot and the recirculation ballot several voters changed their ballots, but none of the changed ballots was accompanied by a comment to explain the reason for the change and there was no discernable pattern in the modifications made:

- Two balloters changed from negative to affirmative;
- Two balloters changed from affirmative to negative;
- One balloter changed from abstain to negative;
- One balloter changed from abstain to affirmative; and
- Two balloters who did not vote initially voted in the affirmative.

Discussion: The goal of the standard BAL-004 is to ensure that time error corrections are conducted in a manner that does not adversely affect the reliability of the interconnection. To accomplish this purpose currently, a single reliability coordinator serves as the Interconnection Time Monitor and is responsible for initiating and terminating time error corrective action in accord with the NAESB business practice addressing this issue. These requirements are part of the BAL-004-0 reliability standard that the FERC approved as mandatory and enforceable in the United States in its March, 2007 Order No. 693 and that which are effective in the applicable Canadian and Mexican jurisdictions as well.

In considering the approval of proposed BAL-004-1 reliability standard, there are numerous factors presented below that support the proposal and another set of factors that suggest the Board should not approve the proposed standard.

Arguments in support of the proposed standard include:

- The proposed standard was processed using the Reliability Standard Development Procedure and a 94 percent industry consensus was achieved.
- Approving the proposed standard allows the status quo to be preserved, that is, a reliability coordinator would continue to be available to serve in the heretofore voluntary role of Interconnection Time Monitor. As there are no current issues with the performance of the Interconnection Time Monitor today, approval of the proposed standard would serve in the best interest of reliability.
- Designating an Interconnection Time Monitor is primarily an issue for the Eastern Interconnection. While the NERC Operating Committee has not expressly designated a reliability coordinator to serve as the Interconnection Time Monitor for any of the interconnections since the June 18, 2007 date on which reliability standards became mandatory and enforceable in the United States, the Midwest Independent System Operator (MISO) is currently performing this function for the Eastern Interconnection as it has historically and voluntarily since June 2003. The situation for WECC is somewhat different in that WECC uses automatic time error correction although periodic manual corrections are still required and are coordinated by one of its three reliability coordinators. The ERCOT and Hydro Quebec interconnections are single balancing authority interconnections and the respective reliability coordinators perform the function for these interconnections.
- Removing the obligation for the NERC Operating Committee to designate the Interconnection Time Monitor is appropriate. The NERC Operating Committee is not a user, owner, or operator of the bulk power system and it is not appropriate to assign requirements to them. Further, in the current regulatory environment, a stakeholder-based committee should not be in a position to designate a particular entity to be held accountable to a standard requirement. The proposed standard eliminates this concern.
- It is questionable whether NERC generally has the authority to name one entity amidst the pool of reliability coordinators to perform the Interconnection Time Monitor service. The proposed standard eliminates this concern.
- The current standard obligates the reliability coordinator chosen as the Interconnection Time Monitor to follow a NAESB standard business practice, which many believe is not appropriate. This proposed standard eliminates this concern.
- The proposed standard assures a reliability coordinator will be available to perform the services of an Interconnection Time Monitor until a more permanent solution to time

error correction is implemented. This potential permanent solution, automatic time error correction, is incorporated in the scope of Project 2007-05 — Balancing Authority Controls in the standards three-year work plan. The SAR for this project was approved and a standard drafting team is being assembled to develop the revised standards. Completion is targeted for the first half of 2009.

- The NERC Operating Committee has reviewed and addressed the performance of the Interconnection Time Monitor for many years and is committed to doing so in the future.
- The NERC Operating Committee has drafted a time monitoring procedure to support the performance expectations withdrawn in the proposed standard. This procedure, expected to be approved at the March 2008 Operating Committee meeting, describes the process that NERC will follow to identify the Interconnection Time Monitors and details their performance expectations.

Arguments against approval of the proposed standard include:

- On the surface, the removal of the obligation of the NERC Operating Committee to designate a reliability coordinator to serve as the Interconnection Time Monitor and the removal of the obligation to perform in accord with the NAESB business practice standard appears to weaken the reliability standard.
- The proposed standard renders unclear the process to identify the reliability coordinator that will serve as the Interconnection Time Monitor.
- The proposed standard establishes no requirement that only one reliability coordinator would serve as the Interconnection Time Monitor in an interconnection.
- The proposed standard does not establish an obligation for the Interconnection Time Monitor to perform any actions such as initiate and terminate time error directives. Thus the authority to act is ambiguous.
- It is also not clear who the Interconnection Time Monitor must notify to direct time error correction actions. The proposed standard clearly articulates that the balancing authorities have an obligation to act when directed but there is no specificity on the communication expectations that connect the Interconnection Time Monitor directives to the balancing authorities.
- Based on the forgoing points, FERC may remand the standard.

Recommendation: BAL-004-1 — Time Error Correction Standard — Approve

The best interest of reliability is served in the near-term by approving the proposed standard BAL-004-1 — Time Error Correction Standard. Approval will preserve the status quo for time error correction while a permanent solution is developed in conjunction with standards Project 2007-05 — Balancing Authority Controls.

There are no outstanding concerns with the performance of the Interconnection Time Monitor. The NERC Operating Committee has acted for many years to review and address the performance of the Interconnection Time Monitor, as necessary, and will continue to do so in the future. Further, approval of this proposed standard will bridge the gap until the permanent solution to time error correction is addressed in the context of standards work plan Project 2007-05, expected to be completed by mid-2009.

b. Regional Standard: BAL-004-WECC-01 Automatic Time Error Correction — Approve with conditions

Action: BAL-004-WECC-01 Automatic Time Error Correction — Approve with conditions

Summary: In the interest of improved reliability, NERC staff recommends Board of Trustee approval of BAL-004-WECC-01 Automatic Time Error Correction (ATEC), under the following conditions:

- (1) Assuming the regional reliability standard is approved by the Commission, the standard shall remain mandatory and enforceable until it is revised, replaced or withdrawn in a subsequent standards action, including approval of the revision, replacement, or withdrawal by the Commission.
- (2) WECC shall meet its commitment to address the shortcomings identified in NERC's review and assessment of the proposed regional standard by submitting a revised version of the standard for approval by the BOT within 18 months after approval of the standard by the Commission.

WECC agrees to make the changes suggested by NERC within 18 months of Commission approval.

The reliability of the bulk power system of the Western Interconnection is best served by the implementation of this proposed regional reliability standard. WECC Regional Standard BAL-004-WECC-01 Automatic Time Error Correction was developed and approved using a NERC-approved regional reliability standard development procedure by a regional entity organized on an interconnection-wide basis, WECC. By using such a procedure, the standard is presumed to be just, reasonable, not unduly discriminatory or preferential, and in the public interest. WECC satisfied all procedural elements for approval and responded appropriately to comments received during NERC's posting of the proposed standard. The WECC Automatic Time Error Correction standard proposed will make mandatory a procedure that has been in place voluntarily since 2003. As such, data exists regarding its effectiveness. Further, the procedure is favorably acknowledged by the Commission in Order 693 as effective.

Background: The Automatic Time Error Correction procedure as proposed in this standard has been utilized in practice voluntarily by WECC Balancing Authorities since 2003. The procedure has been effective in mitigating two main issues in the Western Interconnection. First, it has been used to reduce manual time error corrections, or the amount of manual adjustments of timing errors that accumulate on clocks, which mark certain interconnection scheduled frequency deviations. Second, since time error is directly related to Inadvertent Interchange, the procedure has been used to reduce accumulated Inadvertent Interchange, or the difference between the actual and scheduled interchange. The use of the procedure has reduced the number of hours of off-nominal frequency operation for the Western Interconnection. This procedure is effective because it allows a Balancing Authority to determine its contribution to the Interconnection time error. The Balancing Authority does this by calculating its Primary Inadvertent Interchange (PII). The BAL-004-WECC-01 standard requires that each Balancing Authority calculate its PII from its hourly Inadvertent Interchange and feed the resulting PII into its Area Control Error or ACE equation to continuously correct for its portion of the time error automatically. Although the maximum payback is bounded between limits, the continuous correction enables equitable payback of Inadvertent Interchange.

As defined in Section 312.1 of NERC’s Rules of Procedure, “regional entities may propose regional reliability standards that set more stringent reliability requirements than the NERC reliability standard or cover matter not covered by an existing NERC reliability standard.” This proposed WECC regional standard is justified on the basis that the standard requirements cover topics not currently covered by or presents a requirement more stringent than current NERC reliability standards. Whereas, NERC Reliability Standard BAL-004-1 – Time Error Correction provides for time error correction to be implemented manually, and BAL-006-1 – Inadvertent Interchange provides for capture of inadvertent interchange hourly, the proposed WECC reliability standard provides for *automatic* correction of time error using a more refined primary inadvertent interchange term than included in the NERC standard. As such, the proposed regional standard is more stringent and covers matters not in the NERC standards.

Section 312.3 provides the procedure for developing and approval of an interconnection-wide regional standard:

“312.3.1 **Presumption of Validity** — An interconnection-wide regional reliability standard that is determined by NERC to be just, reasonable, and not unduly discriminatory or preferential, and in the public interest, and consistent with such other applicable standards of governmental authorities, shall be adopted as a NERC reliability standard. NERC shall rebuttably presume that a regional reliability standard developed, in accordance with a regional reliability standards development process approved by NERC, by a regional entity organized on an interconnection-wide basis, is just, reasonable, and not unduly discriminatory or preferential, and in the public interest, and consistent with such other applicable standards of governmental authorities.”

“312.3.3 **Approval of Interconnection-wide Regional Reliability Standard by NERC** — NERC shall evaluate and recommend whether a proposed interconnection-wide regional reliability standard has been developed in accordance with all applicable procedural requirements and whether the regional entity has considered and resolved stakeholder objections that could serve as a basis for rebutting the presumption of validity of the regional reliability standard. . . . The board shall consider the regional entity’s request, NERC’s recommendation for action on the regional reliability standard, any unresolved stakeholder comments, and the regional entity’s consideration of comments, in determining whether to approve the regional reliability standard as a NERC reliability standard.”

As discussed below, WECC has satisfied these procedural requirements for proposing and for NERC approval of the BAL-004-WECC-01 Automatic Time Error Correction regional reliability standard as a NERC reliability standard.

Procedural Summary and Results: The following information summarizes the key process and results of the proposed regional reliability standard BAL-004-WECC-01.

Drafting. In November 2006, WECC posted for initial industry comment draft 1 of the proposed standard. The drafting team reviewed and responded to initial comments in January, 2007. Conforming changes were made and draft 2 was posted for industry comment in March, 2007. In April, 2007, the drafting team posted a revised draft 2 of the proposed standard for comment.

Balloting. In May, 2007, the drafting team presented draft 3 for approval by WECC’s Operating Committee. The WECC Operating Committee balloted the proposed standard in June, 2007. Support for the WECC ATEC standard by the WECC Operating Committee was strong, with the

committee voting 38–1 in favor of the standard with five abstentions. The WECC Board of Directors balloted the proposed standard in July, 2007, voting unanimously to approve the standard.

NERC Approval. In accordance with NERC’s Rules of Procedure for proposed regional reliability standards, WECC submitted the proposed ATEC regional standard to NERC in August, 2007. NERC evaluated the WECC ATEC standard and identified several opportunities to provide additional clarification within the standard. NERC submitted its findings to WECC on August 21, 2007. NERC’s recommendations are included in the body of the proposed standard as “Comments” and are included in [Attachment 6](#) to this discussion, WECC agrees to make the changes suggested by NERC within 18 months of regulatory approval.

Per procedural requirements, NERC posted the WECC ATEC regional standard for a 45-day public comment period from September 21, 2007 through November 5, 2007. There were two sets of comments, one from a representative from Bonneville Power Administration (Transmission Owners segment), and another from Howard Illian of Energy Mark, Inc. (Small Electricity Users segment 8). The comments were forwarded to WECC for response.

The WECC ATEC standard drafting team submitted to NERC its Consideration of Comments report on January 2, 2008. After reviewing the consideration of comments and at the request of the NERC staff, WECC provided a refined Consideration of Comments report to more specifically address the issues offered by the commenters.

Summary of Comments: During the NERC posting of the WECC ATEC standard, Mr. Illian submitted comments and paper titled “Comments on the WECC Auto Time Error Correction Method” to NERC that criticized BAL-004-WECC-01. In his paper, Howard Illian identified the following main concerns:

1. The WATEC Method uses intentionally imbalanced interchange schedules to correct time error without adjusting the scheduled interconnection frequency.
2. The failure to have balanced interchange schedules is the first condition that causes the WATEC Method to fail to comply with the necessary conditions to maintain the integrity of the Control Performance Standard 1 (CPS1) criteria.
3. The hidden adjustment in scheduled frequency caused by the imbalanced interchange schedules is the second condition that causes the WATEC Method to fail to maintain the integrity of the CPS1 criteria.
4. The WECC Automatic Time Error Correction Standard as currently written poses a serious threat to the reliability of the interconnection.

WECC’s Reply: The WECC Performance Work Group, the drafting team for the WECC ATEC standard, respectfully disagreed with Mr. Illian’s assertions that BAL-004-WECC-01 does not maintain the integrity of the CPS1 criteria and that it poses a serious threat to the reliability of the interconnection. In its response, while WECC acknowledges that Mr. Illian’s technical argument has merit, it states that the increase in variability of CPS1 measurement is still well within the threshold defined by NERC’s reliability standard BAL-001-0 – Real Power Balancing Control Performance. To implement Mr. Illian’s approach fully would require AGC changes by each WECC balancing authority at a potential cost in excess of \$1M total for a marginal increase in reliability. WECC therefore believes that this approach as proposed is a responsible cost-efficient approach that has been proven through practice to work effectively. The details of WECC’s replies are found in [Attachment 4](#) to this discussion.

Support for WECC ATEC Approach: The Commission has opined formally on the benefits of the WECC ATEC procedure.

The Commission noted in Order No. 693 that Automatic Time Error Correction is an effective procedure for minimizing Inadvertent Interchange.

“385. Although the Commission noted in the NOPR that WECC’s time error correction procedure appears to serve as a more effective means of accomplishing time error correction, based on concerns that there is no engineering basis for changing the time error correction to the WECC approach, the Commission will not direct the ERO to adopt requirements similar to WECC’s procedure. With the exception of comments from APPA and EEI, most commenters do not believe or are uncertain about whether the WECC procedure is appropriate for the Eastern Interconnection. However, when this Reliability Standard is scheduled for its regular five-year cycle of review, the Commission directs the ERO to perform whatever research it and the industry believe is necessary to provide a sound technical basis for either continuing with the present practice or identifying an alternative practice that is more effective and helps reduce inadvertent interchange.

“386. The Commission agrees with MISO regarding the number of time error corrections using WECC’s procedure. However, the magnitude of the frequency change in the WECC automatic time error correction is smaller than the manual correction and timing of the corrections are better correlated to when the error was created. These two characteristics of the WECC procedure avoid placing the system in less secure conditions and tie the payback to the initiating action, both of which appear to better serve both reliability and equity.”

Attachments: The following attachments are included to provide the record of development for the WECC ATEC regional standard:

- § [Attachment B1 — Regional Reliability Standard Submittal Request](#)
- § [Attachment B2 — Standard Development Roadmap](#)
- § [Attachment B3 — Consideration of Comments document on NERC’s posting of BAL-004-WECC-01](#)
- § [Attachment B4— Refined and Expanded Consideration of Comments](#)
- § [Attachment B5 – BAL-004-WECC-01 Drafting Team Roster](#)
- § [Attachment B6 – NERC Evaluation of the WECC ATEC \(BAL-004-WECC-01\) standard](#)

c. Interpretation of Requirement R4 of VAR-001-1 — Voltage and Reactive Control — Approve

Action: Approve [interpretation](#) of Requirement R4 of [VAR-001-1 — Voltage and Reactive Control](#). Direct staff to file the interpretation (b) with FERC and applicable governmental authorities in Canada.

Supplemental Information – March 26, 2008: The NERC Board deferred action on this proposed interpretation at its February 12, 2008 meeting. At that time, the Board expressed concern that the Generator Operator could be in violation of a standard requirement, and hence subject to penalty, by not adhering to the voltage schedule directed by its Transmission Operator in order to protect its equipment. As the following discussion instructs, this concern is

alleviated through reliability requirements contained in VAR-002-1a – Generator Operation for Maintaining Network Voltage Schedules, the companion reliability standard to VAR-001-1 that is the subject of this interpretation.

The purpose of Reliability Standard VAR-002-1a – Generator Operation for Maintaining Network Voltage Schedules states:

“To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained *within applicable Facility Ratings to protect equipment* and the reliable operation of the Interconnection.”
(emphasis added)

In particular, Requirement R2 states that, “(u)nless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.” Sub-requirement R2.2 goes on to state that “(w)hen directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.”

The term *Facility Rating* is defined in NERC’s Glossary of Terms as “the maximum or minimum voltage, current, frequency, or real or reactive power flow through a facility that *does not violate the applicable equipment rating of any equipment comprising the facility.*” (emphasis added)

Therefore, as prescribed in Requirement R2 of VAR-002-1a, the Generator Operator shall comply with the request of the Transmission Operator only to the extent to which compliance with the directive does not exceed the applicable equipment rating for the generator. When a Generator Operator is not able to comply with the Transmission Operator directive, the Generator Operator must notify and explain to the Transmission Operator why the schedule cannot be met, per Requirement R2.2.

Based on the foregoing information that addresses the original Board concern, NERC recommends that the Board approve the [interpretation](#) of Requirement R4 of [VAR-001-1 — Voltage and Reactive Control](#) and direct staff to file the interpretation with FERC and applicable governmental authorities in Canada.

Background (provided for February 12, 2008 Board meeting): On October 11, 2007, Dynege sent a request for interpretation regarding Requirement R4 of VAR-001-1 — Voltage and Reactive Control. Requirement R4 states:

VAR-001-1 — Voltage and Reactive Control

- R4.** Each Transmission Operator shall specify a voltage or Reactive Power schedule 1 at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).

Dynege specifically requests:

The current wording of Requirement R4 of NERC Reliability Standard VAR-001-1 does not impose any explicit obligations on the Transmission Operator other than to provide

the Generator Operator with a voltage or reactive power output schedule and an associated tolerance band.

Dynegy believes that Requirement R4 of NERC Reliability Standard VAR-001-1 requires interpretation. The specific questions that need to be answered are the following:

- 1. Is the Transmission Operator implicitly required to have a technical basis for specifying the voltage or reactive power schedule and associated tolerance band?*
- 2. Is the Transmission Operator implicitly required to issue a voltage or reactive power schedule and associated tolerance band that is reasonable and practical for the Generator Operator to maintain?*
- 3. What measure should be used to determine if the Transmission Operator has issued a technically based, reasonable and practical to maintain voltage or reactive power schedule and associated tolerance band?*

NERC requested that members of the Phase III and IV Standard Drafting Team that originally developed the VAR-001-1 standard develop the interpretation. The team provided the following response to the interpretation request:

NERC Reliability Standard VAR-001-1 is only comprised of stated requirements and associated compliance elements. The requirements have been developed in a fair and open process, balloted, and accepted by FERC for compliance review. Any “implicit” requirement would be based on subjective interpretation and viewpoint and therefore cannot be objectively measured and enforced. Any attempt at “interpreting an implicit requirement” would effectively be adding a new requirement to the standard. This can only be done through the SAR (standards authorization request) process.

Since there are no requirements in VAR-001-1 to issue a “technically based, reasonable and practical to maintain voltage or reactive power schedule and associated tolerance band”, there are no measures or associated compliance elements in the standard.

The standard only requires that “Each Transmission Operator shall specify a voltage or Reactive Power schedule...” and that “The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule...” Also, Measure 1 and the associated compliance elements follow accordingly by stating that “The Transmission Operator shall have evidence it provided a voltage or Reactive Power schedule ...”

Requirement 2 and Requirement 2.2 of [VAR-002-1 — Generator Operation for Maintaining Network Voltage Schedules](#) relate somewhat to questions #2 and 3. Requirement R2 states that “Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings1) as directed by the Transmission Operator.” R2.2 goes on to state “When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.”

NERC conducted an initial ballot for this interpretation from December 4–13, 2007 and achieved a quorum of 86.41 percent. The ballot also included five negative ballots with comments, initiating the need to conduct a recirculation ballot.

- Four balloters indicated they agreed with the interpretation, but believed the interpretation process should not have been used since it was obvious that the question being asked was not within the requirements of the standard. NERC agrees that careful scrutiny should be exercised when fielding requests for interpretation to ensure they are appropriate for response.
- One balloter indicated that he disagreed with the interpretation, and believed that the standard's requirements do imply that there will be a technical justification for a reactive power schedule. The team disagreed and indicated that the use of the term "implied" is not a stated requirement that can be objectively measured.

NERC conducted a recirculation ballot for this interpretation from January 14–23, 2008. The interpretation received a weighted segment approval vote of 93.18 percent with a quorum of 89.67 percent of the ballot pool participating.

Draft Minutes Board of Trustees

March 26, 2008
Conference Call

Pursuant to notice duly given, Vice Chairman Sharon Nelson called to order an open meeting by conference call of the Board of Trustees of the North American Electric Reliability Corporation on March 26, 2008, at 2:30 p.m., Eastern Daylight Time. As required by the bylaws of the Corporation, dial-in listen-only access was provided to members of the Corporation and the public for the meeting. The notice and agenda for the meeting is attached as **Exhibit A**.

Trustees present on the call in addition to Vice Chairman Nelson were John Q. Anderson, Paul Barber, Tom Berry, Janice Case, James Goodrich, Fred Gorbet, Ken Peterson, Bruce Scherr, and Rick Sergel. Also present on the call were David Whiteley, Gerry Adamski, and David Cook of the NERC staff. Additional participants are listed in **Exhibit B**.

David Cook called attention to the Antitrust Compliance Guidelines included with the agenda package.

Reliability Standard BAL-004-1

Gerry Adamski presented for consideration proposed reliability standard BAL-004-1 that had been deferred from the board's February 12, 2008 meeting (**Exhibit C**). He informed the board that the Operating Committee had approved the *Time Monitoring Reference Document* to guide reliability coordinator selection and functioning at its March meeting (**Exhibit D**). The Midwest ISO had also submitted a letter stating its commitment to continue to serve as time error monitor for the Eastern Interconnection, subject to certain conditions (**Exhibit E**). After discussion, on motion of Fred Gorbet, the board approved reliability standard BAL-004-1 as presented and directed that it be filed with the applicable governmental authorities.

WECC Regional Reliability Standard on Automatic Time Error Correction

Gerry Adamski presented for consideration a proposed regional reliability standard dealing with automatic time error correction, to be applicable solely within the Western Interconnection, BAL-004-WECC-01 (**Exhibit F**). He informed the board that the proposed standard had been approved through the WECC standards development process and had also been posted for comment by NERC. Based on the NERC staff analysis and comments received, staff recommended that the board approve BAL-004-WECC-01, subject to the following conditions:

- (1) Assuming the regional reliability standard is approved by the Commission, the standard shall remain mandatory and enforceable until it is revised, replaced or withdrawn in a

subsequent standards action, including approval of the revision, replacement, or withdrawal by the Commission;

- (2) WECC shall meet its commitment to address the shortcomings identified in NERC's review and assessment of the proposed regional standard by submitting a revised version of the standard for approval by the BOT within 18 months after approval of the standard by the Commission.

Mr. Adamski informed the board that WECC had agreed to make the changes within 18 months of Commission approval as recommended. Following discussion, on motion of Tom Berry, the board approved the following resolution (Janice Case abstained from voting on this matter):

WHEREAS, WECC is a regional entity organized on an Interconnection-wide basis, and proposed regional reliability standard BAL-004-WECC-01 is to be applicable on an Interconnection-wide basis; and

WHEREAS, proposed standard BAL-004-WECC-01 covers a subject (automatic time error correction) that is not covered by NERC's continent-wide standards, or in the alternative, is more stringent than NERC's continent-wide standards; and

WHEREAS, WECC has agreed to make certain clarifications in the proposed standard to address comments raised by NERC within 18 months of approval of the standard by the Federal Energy Regulatory Commission; and

WHEREAS, the Commission has ruled that an approved reliability standard shall remain mandatory and enforceable until it is revised, replaced or withdrawn in a subsequent standards action, including approval of the revision, replacement, or withdrawal by the Commission; and

WHEREAS, the NERC Board of Trustees finds, considering the proposed standard on its merits, that the proposed standard, as conditioned, is just, reasonable, not unduly discriminatory or preferential, and in the public interest;

RESOLVED, that the NERC Board of Trustees approves proposed reliability standard BAL-004-WECC-01, subject to the following conditions:

- (1) Assuming the regional reliability standard is approved by the Commission, the standard shall remain mandatory and enforceable until it is revised, replaced or withdrawn in a subsequent standards action, including approval of the revision, replacement, or withdrawal by the Commission;
- (2) WECC shall meet its commitment to make the clarifications identified in NERC's review and assessment of the proposed regional standard by submitting a revised version of the standard for approval within 18 months after approval of the standard by the Commission.
- (3) NERC shall file the proposed regional reliability standard with the applicable governmental authorities.

Interpretation of Requirement 4 of Reliability Standard VAR-001-1

Gerry Adamski presented for consideration the proposed interpretation to reliability standard VAR-001-1 that had been deferred from the board's February 12, 2008 meeting (**Exhibit G**). He provided the board with additional information concerning the interaction between reliability standards VAR-001-1 and VAR-002-1. After discussion, on motion of Paul Barber, the board approved the interpretation of Requirement 4 of VAR-001-1, as proposed, and directed that it be filed with the applicable governmental authorities.

There being no other business, Vice Chairman Nelson terminated the conference call at 2:50 p.m., EDT.

Submitted by,

A handwritten signature in black ink that reads "David Cook". The signature is written in a cursive style with a large, stylized "D" and "C".

David Cook
Secretary

From: Karen Spolar [Karen.Spolar@nerc.net]
Sent: Monday, March 17, 2008 1:13 PM
To: bot_plus@nerc.com
Subject: NERC Board of Trustees Conference Call -- March 26, 2008
TO: BOARD OF TRUSTEES

Ladies and Gentlemen:

I have scheduled a conference call of the Board of Trustees for Wednesday, March 26, 2008. This call will last approximately one hour. The call details are as follows:

DATE: Wednesday, March 26
TIME: 2:30 p.m. EDT
DIAL-IN: 866-740-9357 (International #660-422-4939)
CODE: 39965416

The purpose of this call is to discuss and approve the following:

- MISO Time-Error Correction
- WECC Time-Error Correction
- Interpretation of VAR-001-1 standard

To be able to speak and participate in the call, please be sure to identify yourselves as "**leaders**" of the call. "**Leader**" distinguishes you from the public in the event that you will need to recess into a closed session.

I will be sending another announcement under separate cover to the members. ***Disregard the conference call number in that announcement, that number is for public access.***

Please let me know if you have any questions.

Sincerely,

Karen

Karen A. Spolar

Executive Assistant
North American Electric Reliability Corporation
116-390 Village Boulevard
Princeton, New Jersey 08540
P: 609-452-8060
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E: karen.spolar@nerc.net
www.nerc.com

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Exhibit A

Agenda

Board of Trustees Conference Call

March 26, 2008 | 2:30 p.m. EDT
Dial-In: 866-503-3045
Code: 39965416

Antitrust Compliance Guidelines

1. **BAL-004-1 — Time Error Correction Standard — Approve**
2. **Regional Standard: BAL-004-WECC-01 — Automatic Time Error Correction — Approve**
3. **Interpretation of Requirement R4 — VAR-001-1 — Approve**

Conference Participant Report

Conf. Date: 3/26/2008

Conf. Time: 1:30 pm CT

Company: North American Electric

Leader: David Cook

Conference ID: 39965416

Start Time	End Time	Name
13:20.36	13:42.49	MR D COOK LDR
13:14.10	13:42.48	MS S NELSON SPK
13:16.33	13:42.47	MR R SERGEL SPK
13:16.49	13:42.49	MR T BERRY SPK
13:18.29	13:42.48	MR P BARBER SPK
13:18.45	13:42.50	MS J CASE SPK
13:18.49	13:42.45	MR K PETERSON SPK
13:19.49	13:42.45	MR F GORBET SPK
13:20.31	13:42.49	MR G ADAMSKI SPK
13:20.34	13:42.50	MR J GOODRICH SPK
13:21.01	13:42.47	MR B SCHERR SPK
13:24.26	13:42.51	MR J ANDERSON SPK
13:12.33	13:42.47	ALICE DRUFFEL
13:22.37	13:42.56	ALLEN MOSHER
13:22.13	13:42.43	BARRY LAWSON
13:22.05	13:42.47	DAVID DVORAK
13:20.14	13:42.47	DOUG LARSON
13:20.07	13:42.51	ED SCHWERDT
13:19.43	13:42.48	GAYLE MAYO
13:26.27	13:42.48	HAROLD ADAMS
13:43.13	13:45.27	JIM LAUTH
13:28.01	13:42.51	JOHN STUTSMAN
13:25.41	13:42.49	JULIA SOUDER
13:18.34	13:42.50	KAREN SPOLAR
13:20.34	13:42.53	KATHY YORK
13:22.58	13:41.25	LARRY MONDAY
13:19.41	13:41.23	LARRY RODRIGUEZ
13:22.39	13:42.47	MARC BUTTS
13:22.55	13:42.24	MARK LODWIG
13:22.18	13:42.46	MAUDE GRANTHAM-RICHARDS

Conference Participant Report
Conf. Date: 3/26/2008
Conf. Time: 1:30 pm CT

Company: North American Electric
Leader: David Cook
Conference ID: 39965416

Start Time	End Time	Name
13:22.41	13:41.14	NABIL HITTI
13:22.59	13:42.47	RAYMOND VOJDANI
13:23.07	13:42.44	RON BECK
13:18.14	13:42.46	SARAH ROGERS
13:21.11	13:42.47	STEVE HICKOK
13:21.25	13:42.43	STEVE RUECKERT
13:21.52	13:42.48	STEVEN NAUMANN
13:17.32	13:41.05	TERRY BILKE
13:17.14	13:42.46	THEODORE PARADISE
13:16.48	13:42.46	TIM GALLAGHER
13:20.49	13:42.50	TRACEY STEWART
13:18.15	13:42.44	VINCE KAMINSKI

BAL-004-1 — Time Error Correction Standard

Board Action Required

Approve [BAL-004-1 — Time Error Correction Standard](#)

Information — March 26, 2008: The NERC Board of Trustees deferred action on this proposed standard at its February 12, 2008 meeting. At that time, the board decided to await the approval of the Operating Committee *Time Monitoring Reference Document* and a letter from the Midwest ISO regarding its commitment to continue as the Interconnection Time Monitor for the Eastern Interconnection.

To that end, at its March 12, 2008 meeting, the Operating Committee approved the *Time Monitoring Reference Document*, included as **Attachment A1**. This document outlines the responsibilities of reliability coordinators serving as time monitors for the North American interconnections and includes that:

- There will be one time monitor within each interconnection, nominated by the Operating Reliability Subcommittee (ORS), accepted by the Operating Committee, and proposed for approval by the NERC Board of Trustees;
- The term of each time monitor is three years with automatic renewal unless notified to the contrary at least six months in advance;
- The ORS will work with a time monitor that fails to fulfill its responsibilities to resolve the problem;
- The ORS will report any frequency or time error issues caused by or aggravated by time error practices or the time monitor to the Operating Committee;
- The time monitor will initiate and terminate time error corrections as outlined in NERC standards and NAESB business practices;
- The time monitor will terminate any time error corrections negatively impacting reliability; and,
- The time monitor will provide accumulated time error following each correction or at least monthly to the balancing authorities within its interconnection.

Also, the Midwest ISO sent a letter on March 11, 2008 (**Attachment A2**) that stated:

- Midwest ISO will continue to voluntarily serve as the Eastern Interconnection time monitor under the provision that NERC will not assess a penalty to Midwest ISO for failure to implement the current standard requirements for properly monitoring time error or for initiating a time error correction. NERC has previously provided this assurance in a May 2007 letter.
- Assuming the proposed standard as drafted is approved by the Commission, Midwest ISO will continue to voluntarily serve as the time monitor for the Eastern Interconnection.
- In the event the proposed standard is not approved by the Commission or an alternate version that places additional requirements and potential compliance risks is approved by

the Commission, the Midwest ISO will reevaluate whether it can continue to volunteer to provide this service.

NERC will develop a long-term solution to the issue of time error correction in its *Reliability Standard Development Plan: 2008–2010*, Project 2007-05 — Balancing Authority Controls.

Based on the foregoing information, NERC recommends the board approve the BAL-004-1 — Time Error Correction reliability standard and direct staff to file the standard with the Commission and applicable governmental authorities in Canada.

Information Provided for February 12, 2008 Board meeting: On July 11, 2007, the NERC Operating Committee (OC) submitted to the Standards Committee a standards authorization request (SAR) and proposed red-lined changes to [BAL-004-0 — Time Error Correction](#) reliability standard Requirements R1 and R2. The stated purpose of this standard is “to ensure that time error corrections are conducted in a manner that does not adversely impact the reliability of the Interconnection.” In the SAR, the NERC OC requested the use of the Urgent Action Process to effect the proposed revisions. The purpose of the SAR is to:

1. Remove inappropriate compliance requirements on reliability coordinators who voluntarily agree to serve as Interconnection Time Monitors;
2. Remove inappropriate compliance requirements on the NERC Operating Committee, which is not a user, owner, or operator; and
3. Remove inappropriate requirements to follow the North American Energy Standards Board (NAESB) business practices.

The proposal ensures that the reliability coordinators continue to voluntarily agree to serve as Interconnection Time Monitors. The NERC OC would continue to approve the Interconnection Time Monitors and review their performance, but not via a standard with its attendant compliance requirements and possible sanctions. Otherwise, as stated in the SAR, it is likely that one or more reliability coordinators may no longer voluntarily agree to perform the service.

Currently, the requirements in BAL-004-0 — Time Error Correction states:

BAL-004-0 — Time Error Correction

R1. Only a Reliability Coordinator shall be eligible to act as Interconnection Time Monitor. A single Reliability Coordinator in each Interconnection shall be designated by the NERC Operating Committee to serve as Interconnection Time Monitor.

R2. The Interconnection Time Monitor shall monitor Time Error and shall initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.

R3. Each Balancing Authority, when requested, shall participate in a Time Error Correction by one of the following methods:

R3.1. The Balancing Authority shall offset its frequency schedule by 0.02 Hertz, leaving the Frequency Bias Setting normal; or

R3.2. The Balancing Authority shall offset its Net Interchange Schedule (MW) by an amount equal to the computed bias contribution during a 0.02 Hertz Frequency Deviation (i.e. 20% of the Frequency Bias Setting).

R4. Any Reliability Coordinator in an Interconnection shall have the authority to request the Interconnection Time Monitor to terminate a Time Error Correction in progress, or a scheduled Time Error Correction that has not begun, for reliability considerations.

R4.1. Balancing Authorities that have reliability concerns with the execution of a Time Error Correction shall notify their Reliability Coordinator and request the termination of a Time Error Correction in progress.

The SAR and red-lined standard proposed the following revisions to Requirements R1 and R2:

BAL-004-1 — Time Error Correction

R1. Only a Reliability Coordinator shall be eligible to act as Interconnection Time Monitor. ~~A single Reliability Coordinator in each Interconnection shall be designated by the NERC Operating Committee to serve as Interconnection Time Monitor.~~

R2. ~~The Interconnection Time Monitor shall monitor Time Error and shall initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.~~

The Requirement R1 change removes the obligation for the NERC OC to designate an entity to serve as the Interconnection Time Monitor since it is not a bulk power system owner, operator, or user.

The deletion of Requirement R2 serves two purposes. First, under the former Operating Policy that addressed time error correction prior to the implementation of the Version 0 standards, an entity volunteered to serve as the Interconnection Time Monitor. After the translation to the Version 0 reliability standards, and now that these standards are mandatory and enforceable, the voluntary role of Interconnection Time Monitor was converted to a role that contains the risk of penalty for noncompliance. Entities currently serving in this capacity today, and those reliability coordinators that could serve in the future, have indicated they may choose not to serve in this role unless the threat of financial penalties is removed. Secondly, the requirement directs the entity serving as the Interconnection Time Monitor to implement time error corrections in accordance with a NAESB procedure. The prevailing opinion of the requester is that it is not appropriate for a reliability standard to compel an entity to comply with NAESB business practices.

At its September 11, 2007 meeting, the Standards Committee approved the posting of the SAR and proposed standard changes using the Urgent Action Process. As a result of this action, the SAR and proposed standard were posted for a 30-day pre-ballot window from September 17–October 18, 2007. NERC conducted an initial ballot from October 18–29, 2007 and achieved a quorum of 96.18 percent. The ballot included seven negative ballots with a comment, initiating the need to conduct a recirculation ballot. Some balloters listed more than one reason for submitting a negative ballot:

- All seven balloters who submitted a negative ballot with a comment indicated that the revisions left unclear what entity will assume the responsibility for serving as the time monitor for each interconnection.
- Three balloters indicated that the revisions left unstated the responsibility for directing the implementation of a time error correction.

- Two balloters indicated that reliability standards should include requirements to comply with NAESB business practices because the NAESB business practice is also FERC-approved.
- One balloter suggested revising Requirement R2 to omit the reference to the NAESB business practice
- One balloter disagreed with the use of the Urgent Action Process.

In response to these comments, the NERC Operating Committee indicated that it is working on a documented process for identifying what entity will serve as the Interconnection Time Monitor for each interconnection and for reviewing the performance of the Interconnection Time Monitor on a forward-basis as it has done for many years. In practice, Interconnection Time Monitors have been very diligent in carrying out their responsibilities in this regard.

NERC posted the response to the comments and conducted a recirculation ballot from November 16–December 4, 2007. The revised standard passed with 97.45 percent of the 157 ballot pool participants voting resulting in a weighted segment approval of 94.10 percent.

Between the initial ballot and the recirculation ballot several voters changed their ballots, but none of the changed ballots was accompanied by a comment to explain the reason for the change and there was no discernable pattern in the modifications made:

- Two balloters changed from negative to affirmative;
- Two balloters changed from affirmative to negative;
- One balloter changed from abstain to negative;
- One balloter changed from abstain to affirmative; and
- Two balloters who did not vote initially voted in the affirmative.

Discussion: The goal of the BAL-004 reliability standard is to ensure that time error corrections are conducted in a manner that does not adversely affect the reliability of the interconnection. To accomplish this purpose currently, a single reliability coordinator serves as the Interconnection Time Monitor and is responsible for initiating and terminating time error corrective action in accord with the NAESB business practice addressing this issue. These requirements are part of the BAL-004-0 reliability standard that the Commission approved as mandatory and enforceable in the United States in its March, 2007 Order No. 693 and that are effective in the applicable Canadian and Mexican jurisdictions as well.

In considering the approval of proposed BAL-004-1 reliability standard, there are numerous factors presented below that support the proposal and another set of factors that suggest the Board should not approve the proposed standard.

Arguments in support of the proposed standard include:

- The proposed standard was processed using the Reliability Standard Development Procedure and a 94 percent industry consensus was achieved.
- Approving the proposed standard allows the status quo to be preserved, that is, a reliability coordinator would continue to be available to serve in the heretofore voluntary role of Interconnection Time Monitor. As there are no current issues with the

performance of the Interconnection Time Monitor today, approval of the proposed standard would serve in the best interest of reliability.

- Designating an Interconnection Time Monitor is primarily an issue for the Eastern Interconnection. While the NERC OC has not expressly designated a reliability coordinator to serve as the Interconnection Time Monitor for any of the interconnections since the June 18, 2007 date on which reliability standards became mandatory and enforceable in the United States, the Midwest Independent System Operator (MISO) is currently performing this function for the Eastern Interconnection as it has historically and voluntarily done since June 2003. The situation for WECC is somewhat different in that WECC uses automatic time error correction although periodic manual corrections are still required and are coordinated by one of its three reliability coordinators. The ERCOT and Hydro Quebec interconnections are single balancing authority interconnections and the respective reliability coordinators perform the function for these interconnections.
- Removing the obligation for the NERC OC to designate the Interconnection Time Monitor is appropriate. The NERC OC is not a user, owner, or operator of the bulk power system and it is not appropriate to assign requirements to them. Further, in the current regulatory environment, a stakeholder-based committee should not be in a position to designate a particular entity to be held accountable to a standard requirement. The proposed standard eliminates this concern.
- It is questionable whether NERC generally has the authority to name one entity amidst the pool of reliability coordinators to perform the Interconnection Time Monitor service. The proposed standard eliminates this concern.
- The current standard obligates the reliability coordinator chosen as the Interconnection Time Monitor to follow a NAESB standard business practice, which many believe is not appropriate. This proposed standard eliminates this concern.
- The proposed standard assures a reliability coordinator will be available to perform the services of an Interconnection Time Monitor until a more permanent solution to time error correction is implemented. This potential permanent solution, automatic time error correction, is incorporated in the scope of Project 2007-05 — Balancing Authority Controls in the *Reliability Standard Development Plan: 2008-2010*. The SAR for this project was approved and a standard drafting team is being assembled to develop the revised standards. Completion is targeted for the first half of 2009.
- The NERC OCe has reviewed and addressed the performance of the Interconnection Time Monitor for many years and is committed to doing so in the future.
- The NERC OC has drafted a time monitoring procedure to support the performance expectations withdrawn in the proposed standard. This procedure, expected to be approved at the March 2008 OC meeting, describes the process that NERC will follow to identify the Interconnection Time Monitors and details their performance expectations.

Arguments against approval of the proposed standard include:

- On the surface, the removal of the obligation of the NERC OC to designate a reliability coordinator to serve as the Interconnection Time Monitor and the removal of the obligation to perform in accord with the NAESB business practice standard appears to weaken the reliability standard.
- The proposed standard renders unclear the process to identify the reliability coordinator that will serve as the Interconnection Time Monitor.

- The proposed standard establishes no requirement that only one reliability coordinator would serve as the Interconnection Time Monitor in an interconnection.
- The proposed standard does not establish an obligation for the Interconnection Time Monitor to perform any actions such as initiate and terminate time error directives. Thus, the authority to act is ambiguous.
- It is also not clear who the Interconnection Time Monitor must notify to direct time error correction actions. The proposed standard clearly articulates that the balancing authorities have an obligation to act when directed but there is no specificity on the communication expectations that connect the Interconnection Time Monitor directives to the balancing authorities.
- Based on the forgoing points, the Commission may remand the standard.

Recommendation: BAL-004-1 — Time Error Correction Standard — Approve

The best interest of reliability is served in the near-term by approving the proposed standard BAL-004-1 — Time Error Correction Standard. Approval will preserve the status quo for time error correction while a permanent solution is developed in conjunction with standards Project 2007-05 — Balancing Authority Controls.

There are no outstanding concerns with the performance of the Interconnection Time Monitor. The NERC OC has acted for many years to review and address the performance of the Interconnection Time Monitor, as necessary, and will continue to do so in the future. Further, approval of this proposed standard will bridge the gap until the permanent solution to time error correction is addressed in the context of the *Reliability Standard Development Plan: 2008-2010* for Project 2007-05 — Balancing Authority Controls, which is expected to be completed by mid-2009.

Time Monitoring Reference Document

Introduction

This procedure outlines responsibilities of reliability coordinators serving as time monitors in the North American interconnections. Changes to this reference document will be at the direction of the NERC Operating Committee (OC) with the participation of the NERC Resources Subcommittee (RS) and the Operating Reliability Subcommittee (ORS).

This document applies to current and future frequency or time related procedural responsibilities assigned to the time monitor in NERC standards or NAESB business practices.

Designation of Time Monitor

There will be one time monitor within each interconnection. NERC ORS will nominate a time monitor for each interconnection. The ORS will present the nomination to the NERC OC for acceptance. The NERC OC will forward the nomination to the NERC Board of Trustees for approval.

The term of each time monitor shall be three (3) years. The time monitor term shall be automatically renewed unless requested otherwise by providing a minimum of six (6) months notice to the NERC ORS. Should an existing time monitor no longer be willing or able to fulfill its responsibilities, the NERC Operating Committee will direct the NERC ORS to nominate a replacement and communicate the transition plan.

If a time monitor fails to fulfill its responsibilities, the NERC ORS will work with the time monitor to resolve the problem. The NERC ORS will submit a report to the NERC OC either identifying corrective measures taken or provide a recommendation for a new time monitor.

The NERC RS will report to the NERC OC and ORS any frequency or time error issues that may have been caused or aggravated by the time monitor or time error correction (TEC) practices.

Responsibilities of the Time Monitor

The time monitor will start and stop time error corrections as outlined in NERC standards and NAESB business practices.

The time monitor will terminate any TEC believed to be negatively impacting reliability. Requests for termination may come from any transmission operator or balancing authority operator to its respective reliability coordinator, who will notify the respective Interconnection's time monitor.

The time monitor will provide accumulated time error following each TEC or at least monthly to the BAs within its interconnection.

References

Links to each time monitor's local procedures to meet this procedure will be posted at the NERC RS Web site (<http://www.nerc.com/~filez/rs.html>).

Interconnection Time Monitors

Each interconnection has identified the following reliability coordinator as its time monitor:

1. ERCOT Interconnection – ERCOT reliability coordinator
2. Québec Interconnection – Hydro-Québec TransÉnergie reliability coordinator
3. Eastern Interconnection – Midwest ISO reliability coordinator
4. WECC Interconnection – California Mexico reliability coordinator

cc: R. Sergei
D. Cook

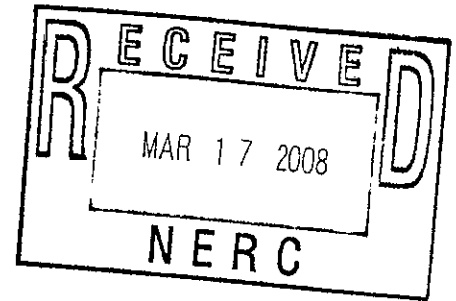
Exhibit E



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March 11, 2008

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Mr. David W. Hilt
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Re: Standard BAL-004 "Time Error Correction"

Dear David and David:

This is a follow up to my May 23, 2007 letter to you regarding compliance enforcement with Standard BAL-004. As you may recall, the May 23, 2007 letter was a response to your May 11, 2007 letter on Standard BAL-004, Requirement 2 compliance enforcement. Midwest ISO appreciates the Resource Subcommittee's, Operating Reliability Subcommittee's, Operating Committee's, Standards Committee's, and Board of Trustees' resulting collaboration on putting in place a revised BAL-004.

Until the Board of Trustees and FERC approve the revised BAL-004-1 – Time Error Correction, Midwest ISO will continue to voluntarily serve, without compensation, as the Eastern Interconnection Time Monitor given that, per your May 11, 2007 letter, NERC will not assess a penalty if someone reports that the interconnection monitor failed to properly monitor time error or did not call for a time error correction as required in the standard.

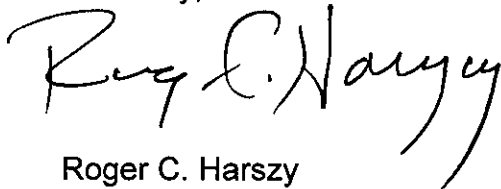
Further, when the BAL-004-1 – Time Error Correction is approved by FERC and placed in effect, assuming Requirement 2 is deleted per the current draft before the Board of Trustees, the Midwest ISO plans to continue to voluntarily serve as the Eastern Interconnection Time Monitor. In the event, BAL-004-1 – Time Error Correction is not approved by FERC, Midwest ISO will reevaluate whether it can continue to volunteer to provide this service. Also, if a BAL-004-2 or related standard is put forth that would place additional requirements and potential

Mr. David A. Whiteley
Mr. David W. Hilt
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compliance risks on the Interconnection Time Monitor, Midwest ISO will reevaluate whether it can continue to volunteer to provide this service.

Again, Midwest ISO fully intends to comply with BAL-004 while it is the Eastern Interconnection Time Monitor. We appreciate NERC's attention to this matter and collaboration on a mutually beneficial solution for the industry.

Sincerely,

A handwritten signature in black ink that reads "Roger C. Harszy". The signature is written in a cursive style with a large, sweeping "R" and "y".

Roger C. Harszy
Vice President, Real Time Operations

Cc: Larry Kezele, NERC
Mike McMullen, Midwest ISO
David Zwergel, Midwest ISO
Tim Gallagher, ReliabilityFirst
Dan Skaar, Midwest Reliability Organization
Charles Yeung, Southwest Power Pool

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

Board Action Required

Approve Regional Standard: BAL-004-WECC-01 — Automatic Time Error Correction **with conditions**

Information

In the interest of improved reliability, NERC staff recommends Board of Trustees approval of BAL-004-WECC-01 — Automatic Time Error Correction (ATEC), under the following conditions:

1. Assuming the Regional Reliability Standard is approved by the Commission, the standard shall remain mandatory and enforceable until it is revised, replaced, or withdrawn in a subsequent standards action, including approval of the revision, replacement, or withdrawal by the Commission.
2. WECC shall meet its commitment to address the shortcomings identified in NERC's review and assessment of the proposed regional standard by submitting a revised version of the standard for approval by the BOT within 18 months after approval of the standard by the Commission.

WECC agrees to make the changes suggested by NERC within 18 months of Commission approval.

The reliability of the bulk power system of the Western Interconnection is best served by the implementation of this proposed regional reliability standard. WECC Regional Standard BAL-004-WECC-01 — Automatic Time Error Correction was developed and approved using a NERC-approved Regional Reliability Standard Development Procedure by a Regional Entity organized on an interconnection-wide basis, WECC. By using such a procedure, the standard is presumed to be just, reasonable, not unduly discriminatory or preferential, and in the public interest. WECC satisfied all procedural elements for approval and responded appropriately to comments received during NERC's posting of the proposed standard. The WECC Automatic Time Error Correction standard proposed will make mandatory a procedure that has been in place voluntarily since 2003. As such, data exists regarding its effectiveness. Further, the procedure is favorably acknowledged by the Commission in Order 693 as effective.

The Automatic Time Error Correction procedure as proposed in this standard has been utilized in practice voluntarily by WECC Balancing Authorities since 2003. The procedure has been effective in mitigating two main issues in the Western Interconnection. First, it has been used to reduce manual time error corrections, or the amount of manual adjustments of timing errors that accumulate on clocks, which mark certain interconnection scheduled frequency deviations. Second, since time error is directly related to Inadvertent Interchange, the procedure has been used to reduce accumulated Inadvertent Interchange, or the difference between the actual and scheduled interchange. The use of the procedure has reduced the number of hours of off-nominal frequency operation for the Western Interconnection. This procedure is effective because it allows a Balancing Authority to determine its contribution to the Interconnection time error. The Balancing Authority does this by calculating its Primary Inadvertent Interchange (PII). The BAL-004-WECC-01 standard requires that each Balancing Authority calculate its PII

from its hourly Inadvertent Interchange and feed the resulting PII into its Area Control Error (ACE) equation to continuously correct for its portion of the time error automatically. Although the maximum payback is bounded between limits, the continuous correction enables equitable payback of Inadvertent Interchange.

As defined in Section 312.1 of NERC's Rules of Procedure, "regional entities may propose regional reliability standards that set more stringent reliability requirements than the NERC reliability standard or cover matter not covered by an existing NERC reliability standard." This proposed WECC regional standard is justified on the basis that the standard requirements cover topics not currently covered by or presents a requirement more stringent than current NERC Reliability Standards. Whereas, NERC Reliability Standard BAL-004-1 — Time Error Correction provides for time error correction to be implemented manually, and BAL-006-1 — Inadvertent Interchange provides for capture of inadvertent interchange hourly, the proposed WECC reliability standard provides for *automatic* correction of time error using a more refined primary inadvertent interchange term than included in the NERC standard. As such, the proposed regional standard is more stringent and covers matters not in the NERC standards.

Section 312.3 provides the procedure for developing an approval of an interconnection-wide regional standard:

“312.3.1 Presumption of Validity — An interconnection-wide regional reliability standard that is determined by NERC to be just, reasonable, and not unduly discriminatory or preferential, and in the public interest, and consistent with such other applicable standards of governmental authorities, shall be adopted as a NERC reliability standard. NERC shall rebuttably presume that a regional reliability standard developed, in accordance with a regional reliability standards development process approved by NERC, by a regional entity organized on an interconnection-wide basis, is just, reasonable, and not unduly discriminatory or preferential, and in the public interest, and consistent with such other applicable standards of governmental authorities.”

“312.3.3 Approval of Interconnection-wide Regional Reliability Standard by NERC — NERC shall evaluate and recommend whether a proposed interconnection-wide regional reliability standard has been developed in accordance with all applicable procedural requirements and whether the regional entity has considered and resolved stakeholder objections that could serve as a basis for rebutting the presumption of validity of the regional reliability standard....The board shall consider the regional entity's request, NERC's recommendation for action on the regional reliability standard, any unresolved stakeholder comments, and the regional entity's consideration of comments, in determining whether to approve the regional reliability standard as a NERC reliability standard.”

As discussed below, WECC has satisfied these procedural requirements for proposing and for NERC approval of the BAL-004-WECC-01 — Automatic Time Error Correction regional reliability standard as a NERC Reliability Standard.

Procedural Summary and Results

The following information summarizes the key process and results of the proposed regional reliability standard BAL-004-WECC-01 — Automatic Time Error Correction (ATEC).

Drafting: In November 2006, WECC posted for initial industry comment draft 1 of the proposed standard. The drafting team reviewed and responded to initial comments in January 2007. Conforming changes were made and draft 2 was posted for industry comment in March

2007. In April 2007, the drafting team posted a revised draft 2 of the proposed standard for comment.

Balloting: In May 2007, the drafting team presented draft 3 for approval by WECC's Operating Committee. The WECC Operating Committee balloted the proposed standard in June 2007. Support for the WECC ATEC standard by the WECC Operating Committee was strong, with the committee voting 38–1 in favor of the standard with five abstentions. The WECC Board of Directors balloted the proposed standard in July 2007, voting unanimously to approve the standard.

NERC Approval: In accordance with NERC's Rules of Procedure for proposed Regional Reliability Standards, WECC submitted the proposed ATEC regional standard to NERC in August 2007. NERC evaluated the WECC ATEC standard and identified several opportunities to provide additional clarification within the standard. NERC submitted its findings to WECC on August 21, 2007. NERC's recommendations are included in the body of the proposed standard as "Comments" and are included in **Attachment B6** to this discussion, WECC agrees to make the changes suggested by NERC within 18 months of regulatory approval.

Per procedural requirements, NERC posted the WECC ATEC regional standard for a 45-day public comment period from September 21–November 5, 2007. There were two sets of comments, one from a representative from Bonneville Power Administration (Transmission Owners, segment 1), and another from Howard Illian of Energy Mark, Inc. (Small Electricity Users, segment 8). The comments were forwarded to WECC for response.

The WECC ATEC standard drafting team submitted to NERC its Consideration of Comments report on January 2, 2008. After reviewing the consideration of comments and at the request of the NERC staff, WECC provided a refined Consideration of Comments report to more specifically address the issues offered by the commenters.

Summary of Comments: During the NERC posting of the WECC ATEC standard, Mr. Illian submitted comments and paper titled "Comments on the WECC Auto Time Error Correction Method" to NERC that criticized BAL-004-WECC-01. In his paper, Howard Illian identified the following main concerns:

1. The WECC ATEC Method uses intentionally imbalanced interchange schedules to correct time error without adjusting the scheduled interconnection frequency.
2. The failure to have balanced interchange schedules is the first condition that causes the WECC ATEC Method to fail to comply with the necessary conditions to maintain the integrity of the Control Performance Standard 1 (CPS1) criteria.
3. The hidden adjustment in scheduled frequency caused by the imbalanced interchange schedules is the second condition that causes the WECC ATEC Method to fail to maintain the integrity of the CPS1 criteria.
4. The WECC Automatic Time Error Correction Standard as currently written poses a serious threat to the reliability of the interconnection.

WECC's Reply: The WECC Performance Work Group and the drafting team for the WECC ATEC standard, respectfully disagreed with Mr. Illian's assertions that BAL-004-WECC-01 does not maintain the integrity of the CPS1 criteria and that it poses a serious threat to the reliability of the interconnection. In its response, while WECC acknowledges that Mr. Illian's technical argument has merit, it states that the increase in variability of CPS1 measurement is

still well within the threshold defined by NERC's Reliability Standard [BAL-001-0 — Real Power Balancing Control Performance](#). To implement Mr. Illian's approach fully would require AGC changes by each WECC balancing authority at a potential cost in excess of \$1M total for a marginal increase in reliability. WECC therefore believes that this approach, as proposed, is a responsible cost-efficient approach that has been proven through practice to work effectively. The details of WECC's replies are found in **Attachment B4** to this discussion.

Support for WECC ATEC Approach: The Commission has opined formally on the benefits of the WECC ATEC procedure.

The Commission noted in Order No. 693 that Automatic Time Error Correction is an effective procedure for minimizing Inadvertent Interchange.

“385. Although the Commission noted in the NOPR that WECC's time error correction procedure appears to serve as a more effective means of accomplishing time error correction, based on concerns that there is no engineering basis for changing the time error correction to the WECC approach, the Commission will not direct the ERO to adopt requirements similar to WECC's procedure. With the exception of comments from APPA and EEI, most commenters do not believe or are uncertain about whether the WECC procedure is appropriate for the Eastern Interconnection. However, when this Reliability Standard is scheduled for its regular five-year cycle of review, the Commission directs the ERO to perform whatever research it and the industry believe is necessary to provide a sound technical basis for either continuing with the present practice or identifying an alternative practice that is more effective and helps reduce inadvertent interchange.

“386. The Commission agrees with MISO regarding the number of time error corrections using WECC's procedure. However, the magnitude of the frequency change in the WECC automatic time error correction is smaller than the manual correction and timing of the corrections are better correlated to when the error was created. These two characteristics of the WECC procedure avoid placing the system in less secure conditions and tie the payback to the initiating action, both of which appear to better serve both reliability and equity.”

Attachments: The following attachments are included to provide the record of development for the WECC ATEC regional standard:

- Attachment B1 — Regional Reliability Standard Submittal Request
- Attachment B2 — Standard Development Roadmap
- Attachment B3 — Consideration of Comments document on NERC's posting of BAL-004-WECC-01
- Attachment B4 — Refined and Expanded Consideration of Comments
- Attachment B5 — BAL-004-WECC-01 Drafting Team Roster
- Attachment B6 — NERC Evaluation of the WECC ATEC (BAL-004-WECC-01) standard

Interpretation of Requirement R4 — VAR-001-1

Board Action Required

Approve Interpretation of Requirement R4 — VAR-001-1

Information — March 26, 2008: The NERC Board of Trustees deferred action on this proposed interpretation at its February 12, 2008 meeting. At that time, the board expressed concern that the Generator Operator could be in violation of a standard requirement, and hence subject to penalty, by not adhering to the voltage schedule directed by its Transmission Operator in order to protect its equipment. As the following discussion instructs, this concern is alleviated through reliability requirements contained in VAR-002-1a — Generator Operation for Maintaining Network Voltage Schedules, the companion reliability standard to VAR-001-1 — Voltage and Reactive Control that is the subject of this interpretation.

The purpose of reliability standard VAR-002-1a — Generator Operation for Maintaining Network Voltage Schedules states:

“To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained *within applicable Facility Ratings to protect equipment* and the reliable operation of the Interconnection.”
(emphasis added)

In particular, Requirement R2 states that, “(u)nless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.” Sub-requirement R2.2 goes on to state that “(w)hen directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.”

The term *Facility Rating* is defined in NERC’s Glossary of Terms as “the maximum or minimum voltage, current, frequency, or real or reactive power flow through a facility that *does not violate the applicable equipment rating of any equipment comprising the facility.*” (emphasis added).

Therefore, as prescribed in Requirement R2 of VAR-002-1a, the Generator Operator shall comply with the request of the Transmission Operator only to the extent to which compliance with the directive does not exceed the applicable equipment rating for the generator. When a Generator Operator is not able to comply with the Transmission Operator directive, the Generator Operator must notify and explain to the Transmission Operator why the schedule cannot be met, per Requirement R2.2.

Based on the foregoing information that addresses the original Board concern, NERC recommends that the board approve the interpretation of Requirement R4 of VAR-001-1 — Voltage and Reactive Control and direct staff to file the interpretation with FERC and applicable governmental authorities in Canada.

Background Provided for February 12, 2008 Board meeting: On October 11, 2007, Dynege sent a request for interpretation regarding Requirement R4 of VAR-001-1 — Voltage and Reactive Control. Requirement R4 states:

VAR-001-1 — Voltage and Reactive Control

- R4.** Each Transmission Operator shall specify a voltage or Reactive Power schedule 1 at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).

Dynegy specifically requests:

The current wording of Requirement R4 of NERC Reliability Standard VAR-001-1 does not impose any explicit obligations on the Transmission Operator other than to provide the Generator Operator with a voltage or reactive power output schedule and an associated tolerance band.

Dynegy believes that Requirement R4 of NERC Reliability Standard VAR-001-1 requires interpretation. The specific questions that need to be answered are the following:

- 1. Is the Transmission Operator implicitly required to have a technical basis for specifying the voltage or reactive power schedule and associated tolerance band?*
- 2. Is the Transmission Operator implicitly required to issue a voltage or reactive power schedule and associated tolerance band that is reasonable and practical for the Generator Operator to maintain?*
- 3. What measure should be used to determine if the Transmission Operator has issued a technically based, reasonable and practical to maintain voltage or reactive power schedule and associated tolerance band?*

NERC requested that members of the Phase III and IV Standard Drafting Team that originally developed the VAR-001-1 standard develop the interpretation. The team provided the following response to the interpretation request:

NERC Reliability Standard VAR-001-1 is only comprised of stated requirements and associated compliance elements. The requirements have been developed in a fair and open process, balloted, and accepted by FERC for compliance review. Any “implicit” requirement would be based on subjective interpretation and viewpoint and therefore cannot be objectively measured and enforced. Any attempt at “interpreting an implicit requirement” would effectively be adding a new requirement to the standard. This can only be done through the SAR (standards authorization request) process.

Since there are no requirements in VAR-001-1 to issue a “technically based, reasonable and practical to maintain voltage or reactive power schedule and associated tolerance band”, there are no measures or associated compliance elements in the standard.

The standard only requires that “Each Transmission Operator shall specify a voltage or Reactive Power schedule...” and that “The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule...” Also, Measure 1 and the associated compliance elements follow accordingly by stating that “The Transmission Operator shall have evidence it provided a voltage or Reactive Power schedule ...”

Requirement 2 and Requirement 2.2 of [VAR-002-1 — Generator Operation for Maintaining Network Voltage Schedules](#) relate somewhat to questions #2 and 3. Requirement R2 states that “Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings1) as directed by the Transmission Operator.” R2.2 goes on to state “When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.”

NERC conducted an initial ballot for this interpretation from December 4–13, 2007 and achieved a quorum of 86.41 percent. The ballot also included five negative ballots with comments, initiating the need to conduct a recirculation ballot.

- Four balloters indicated they agreed with the interpretation, but believed the interpretation process should not have been used since it was obvious that the question being asked was not within the requirements of the standard. NERC agrees that careful scrutiny should be exercised when fielding requests for interpretation to ensure they are appropriate for response.
- One balloter indicated that he disagreed with the interpretation, and believed that the standards requirements do imply that there will be a technical justification for a reactive power schedule. The team disagreed and indicated that the use of the term “implied” is not a stated requirement that can be objectively measured.

NERC conducted a recirculation ballot for this interpretation from January 14–23, 2008. The interpretation received a weighted segment approval vote of 93.18 percent with a quorum of 89.67 percent of the ballot pool participating.

Exhibit C

**The Complete Development Record of the Proposed Regional Reliability
Standard**

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:

Description of Current Draft:

Future Development Plan:

Anticipated Actions	Anticipated Date
1. Post Draft Standard for initial industry comments	October, 2006
2. Drafting Team to review and respond to initial industry comments..	December, 2006
3. WECC ballots proposed standard	January, 2007

Definitions of Terms Used in 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 defined terms will be removed from the individual standard and added to the Glossary.

Automatic Time Error Correction: A frequency control automatic action that a Balancing Authority uses to offset its frequency contribution to support the Interconnection's scheduled frequency.

Primary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of area (n) itself.

Secondary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of area (i).

A. Introduction

Title: Time Error Correction

Number: BAL-STD-004-0

Purpose: To maintain Interconnection frequency within a predefined frequency profile under all conditions (i.e. normal and abnormal). To require the Balancing Authority that caused a time error to correct the time error in a specified time period.

NERC standards require each Interconnection to have a Time Error Monitor who:

1. Monitors the current time error and initiates or terminates Manual Time Error Correction action orders.

Additionally, NERC standards require balancing authorities (BAs) to:

1. Each Balancing Authority, when requested, shall participate in a Time Error Correction.

Applicability:

1. Balancing Authorities (BA)

Effective Date: Completion of Formal Standards Process

B. Requirements

R1. Automatic Time Error Correction

R1.1. Each BA that operates synchronously to its Interconnection shall continuously operate utilizing the Automatic Time Error Correction (ATEC) metric in its Automatic Generation Control (AGC) system.

R1.1.1. Any BA that removes the ATEC metric from its AGC system, other than for routine maintenance, shall notify all other BA through the designated Interconnection communication system.

R1.2. BAs shall be able to change their AGC operating mode between:

R1.2.1. Flat Frequency (for blackout restoration)

R1.2.2. Flat Tie Line (for loss of frequency error telemetry)

R1.2.3. Tie Line Bias (this is the default NERC equation used for CPS)

R1.2.4. Tie Line Bias plus Time Error control (used in ATEC mode)

R1.3. Each BA shall compute its hourly Primary Inadvertent Interchange at the end of each hour. This hourly value shall be added to the appropriate accumulated Inadvertent Interchange balance for either On-Peak or Off-Peak periods

R1.3.1. Each BA shall use its own Time Error readings derived from the same frequency source it is using in the ACE Frequency Bias obligation term.

R1.3.2. Each BA shall use the ATEC equation when operating in the ATEC mode:

R1.3.3. Each BA 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.

$$ATEC_i = (NI_A - NI'_S) - 10B_i(F_A - F_S) - T_{ob} + I_{ME}$$

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 i (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)

$$NI'_S = NI_S - \frac{II_{Primary}^{on/off\ peak}}{(1-Y)*H}$$

NI_S = Net Interchange Scheduled (MW)

$Y = B_i / B_S$.

H = Number of Hours used to payback Inadvertent Interchange Energy.

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

$II_{primary}^{on/off\ peak}$ = is the Control Area's accumulated primary inadvertent interchange in MWh. An On-Peak and Off-Peak accumulation accounting is required.

Where:

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

II_{actual} is the hourly Inadvertent Interchange for the last hour

ΔTE is the hourly change in system Time Error adjusted for any manual Time Error Corrections and Time Error adjustments

Where:

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

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 offset is usually either +0.020 seconds or -0.020 seconds or 0.000 seconds. The Time Monitor may declare offsets in 0.001-second increments.

C. Measures

M1. A BA shall record the date, time, reason, and notification [to other BAs] for any time it is not operating utilizing Automatic Time Error Correction (ATEC) in its Automatic Generation Control (AGC) system.

- M2.** A BA must be able to demonstrate its ability to change its AGC operating mode when requested or during compliance audits and readiness reviews.
- M3.** A BA must record its hourly Primary Inadvertent Interchange and keep an accurate record of its accumulation of Primary Inadvertent Interchange for either On-Peak or 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 Reliability Organization

1.2. Compliance Monitoring Period and Reset time Frame

The reporting period for ATEC is one calendar quarter, starting on the quarter's first second and ending the last second of the quarter.

The Performance-reset Period is one calendar quarter.

1.3. Data Retention

The Balancing Authority shall retain its hourly calculation of total and Primary Inadvertent Interchange calculated hourly as well as the amount of Primary Inadvertent paid back hourly for the preceding calendar year (January – December) plus the current year.

The Balancing Authority 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.

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

The Compliance Monitor shall retain audit data for three calendar years

1.4. 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 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:

1.4.1. Source data for calculating Primary Inadvertent

1.4.2. Data showing On and Off-Peak Primary Inadvertent accumulations

1.4.3. Data showing hourly payback of Primary Inadvertent

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

2. Levels of Non-Compliance (Note: Apply sanctions separately for each type of violation and for each violation.)

2.1. Non-Compliance with Operating in ATEC Control Mode

2.1.1. Level 1: 1 day < Time not in ATEC Mode ≤ 3 days

2.1.2. Level 2: 3 days < Time not in ATEC Mode ≤ 5 days

2.1.3. Level 3: 5 days < Time not in ATEC Mode ≤ 7 days

2.1.4. Level 4: Time not in ATEC Mode > 7 days

2.2. Non-Compliance with Notifying other Balancing Authorities when not Operating in ATEC Mode

2.2.1. Level 1: Balancing Authority operates without ATEC and does not notify other Balancing Authorities 1 or 2 times in quarter

2.2.2. Level 2: Balancing Authority operates without ATEC and does not notify other Balancing Authorities 2 or 3 times in quarter

2.2.3. Level 3: Balancing Authority operates without ATEC and does not notify other Balancing Authorities 3 or 4 times in quarter

2.2.4. Level 4: Balancing Authority operates without ATEC and does not notify other Balancing Authorities more than 4 times in quarter

2.3. Non-Compliance with Ability to Change Operating Mode

2.3.1. Level 1: Balancing Authority cannot change operating mode but has documented plan for correcting this within six months

2.3.2. Level 2: Balancing Authority cannot change operating mode but has documented plan for correcting this within 12 months

2.3.3. Level 3: Balancing Authority cannot change operating mode but has documented plan for correcting this within 18 months

2.3.4. Level 4: Balancing Authority cannot change operating mode and has no documented plan for correcting this or documented plan will not correct within 18 months

2.4. Non-Compliance with Primary Inadvertent Calculation

2.4.1. Level 1: Balancing Authority incorrectly calculates Primary Inadvertent but has documented plan for correcting this within one month

2.4.2. Level 2: Balancing Authority incorrectly calculates Primary Inadvertent but has documented plan for correcting this within two months

Standard BAL-004-1 — Time Error Correction

- 2.4.3. Level 3:** Balancing Authority incorrectly calculates Primary Inadvertent but has documented plan for correcting this within three months
- 2.4.4. Level 4:** Balancing Authority incorrectly calculates Primary Inadvertent and has no documented plan for correcting this or documented plant will not correct within three months

Version History

Version	Date	Action	Change Tracking
0	February 4, 2003	Effective Date	New
0	October 17, 2006	Created Standard from Procedure	Errata

Responses to ATEC Comments from Gary Nolan (SRP)
WECC Performance Work Group - 1/23/2007

R1.1.1. "Any BA that removes the ATEC metric from its AGC system, other than for routine maintenance, shall notify all other BA through the designated Interconnection communication system."

Comment: What benefit to reliability does excluding this reason from notification provide? Why not require notifications of all removals?

Gary Nolan
Salt River Project

Response:

The Standard has been modified removing the exception for notification.

Responses to ATEC Comments from Dave Lemmons (PSCO)
WECC Performance Work Group - 1/23/2007

"Public Service Company of Colorado (PSCO) appreciates the opportunity to comment on the proposed Automatic Time Error Correction standard.

PSCO first points out that this is not truly a reliability issue. If this is not done, it will not adversely impact reliability in the interconnection. This standard is much more about equitable payback of inadvertent interchange. For this reason, it should be considered a business practice rather than reliability standard.

Response:

The primary purpose of ATEC is to have the balancing authority creating the time error to correct the time error in a given amount of time thereby reducing the number of manual time error corrections imposed on the interconnection.

Payback of inadvertent is a by-product of ATEC.

If ATEC were not implemented, there would probably be more instances when manual time error correction would be instigated by the time monitor. If the measure requires scheduling frequency at 59.98 Hz, there will then be more instances when frequency is closer to the Frequency Trigger Limit. PWG believes any deviation from scheduled frequency is a step toward unreliable operation. Operations will more often be in a state where reliability is more at risk than when ATEC was active.

Under Requirement R1.1, the requirement is that a Balancing Authority (BA) must always operate with ATEC in operation. Then R1.1.1 allows the BA to not have it in operation. R1.1.1 makes R1.1 unenforceable and allows a BA to just notify all the other BAs that it is not in use. The Compliance section states that an outage of greater than a day causes a Level 1 violation, but there is no justification for the limit. This issue must be addressed or there is no reason to put this requirement into effect.

Response:

R1.1 sub-bullets have been revised as follows:

R1.1.1 Per BAL-005 Automatic Generation Control Requirement 7, each BA "shall operate AGC continuously unless such operation adversely impacts the reliability of the interconnection." In so doing, the operating mode of AGC must be ATEC unless equipment failures or other system conditions dictate otherwise.

R1.1.2 Each BA that removes the ATEC metric from its AGC system shall notify all other BAs through the designated Interconnection communication system.

R1.1.3 Pursuant to R1.1.1, each BA will be allowed to have ATEC out of service for no more than 24 hours per calendar quarter, for reasons including maintenance, testing, and such conditions described in R1.1.1

Under the proposed ACE equation section, the term H is not defined such that the equation can be solved. PSCO believes that this must be included in the standard to make it enforceable, or at the very least there needs to be a reference to where that number is approved and published. Otherwise, each entity can put any number they choose into the calculation and be in compliance, which defeats the desire to have all parties participating in the same manner.

Response:

The following will be added to the Standard: "The Performance Work Group has set the value of H to 3."

Under measure M3, the word "either" in the second line should be "both." Otherwise, an entity is only required to keep information on one of the two accounts.

Response:

The Standard will be modified accordingly.

The standard does not address what is to be done in the event an entity accumulates a large balance and it is not able to reduce this balance. PSCO believes this issue must be addressed in the Business Practice before it can be approved.

Response:

R1.1 will be revised as follows:

R1.1.4 Large accumulations of primary inadvertent indicate an invalid implementation of ATEC, loose control, metering or accounting errors. These conditions do not invalidate ATEC. A BA in such a situation should correct the errors and continue to operate with ATEC reducing the accumulation as system parameters allow.

As a final note, PSCO questions the need for WECC to develop this regional standard when it is being worked on at NERC. This is causing needless duplication of effort."

Response:

WECC already has ATEC implemented while the Eastern Interconnection has a different algorithm. What we learn from the WECC effort can be applied to the NERC process.

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:

Description of Current Draft:

The Automatic Time Error Correction (ATEC) component is now included in the N_{t} term instead of as a separate term in the ACE equation. This only changes the order of the terms in the ATEC ACE equation, not the calculated ACE.

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Future Development Plan:

Anticipated Actions	Anticipated Date
1. Post Draft Standard for initial industry comments	October, 2006
2. Drafting Team to review and respond to initial industry comments.	December, 2006
3. WECC ballots proposed standard	January, 2007
4. Revised standard posted for comments	April, 2007

Definitions of Terms Used in 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 ~~defined terms~~definitions will be removed from the ~~individual~~ standard and added to the Glossary.

Automatic Time Error Correction: A frequency control automatic action that a Balancing Authority uses to offset its frequency contribution to support the Interconnection's scheduled frequency.

Primary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of the area (n) ~~itself~~.

Secondary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of area (i).

A. Introduction

Title: Automatic Time Error Correction

Number: BAL-STD-004-1

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

Applicability:

- Balancing Authorities (BA) that operate synchronously to the Western Interconnection.

Effective Date: ~~On the first day of the first Quarter, after applicable regulatory approval.~~ Completion of Formal Standards Process

B. Requirements

RI. ~~Each BA that operates synchronously to the Western Interconnection shall continuously operate utilizing the Automatic Time Error Correction (ATEC) metric in its Automatic Generation Control (AGC) system, with the exception that each BA will be allowed to have ATEC out of service for a maximum of 24 hours per calendar quarter, for reasons including maintenance, testing, and if such operations adversely impact the reliability of the Interconnection. [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).

$$NI'_S = NI_S - \frac{\prod_{Primary}^{on/off\ peak}}{(1 - Y) * H}$$

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).

$\prod_{primary}^{on/off\ peak}$ = is the Balancing Authority's accumulated primary inadvertent interchange in MWh. An On-Peak and Off-Peak accumulation accounting is required.

Where:

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

Π_{actual} is the hourly Inadvertent Interchange for the last hour.

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ΔTE is the hourly change in system Time Error ~~adjusted for any manual Time Error Corrections and Time Error adjustments~~ as distributed by the Interconnection Time Monitor.

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Where:

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

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TD_{adj} is any operator adjustment to the control center Time Error to correct for differences with the time monitor. ~~The Time Monitor may declare adjustments in 0.001-second increments.~~

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

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TE offset is 0.000 or ~~usually either~~ +0.020 or -0.020 ~~or 0.000.~~

R1.1. ~~The upper limit to the amount of WECC Automatic Time Error Correction term~~

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

~~is bounded between 20% of the Balancing Authority's frequency bias~~

~~setting and the Balancing Authority's allowable ACE limit for CPS2 defined by its L_{10} . If the WECC Automatic Time Error Correction term is less than the upper limit then payback is equal to the calculated WECC Automatic Time Error Correction term. The absolute value of the WECC Automatic Time Error Correction term is limited as follows:~~

R1.1.

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

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

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

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

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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 ~~recalculate the primary inadvertent from the time of the error~~, adjust the ~~adjust the~~ accumulated primary inadvertent caused by the error(s), validate the implementation of ATEC ~~validate the implementation of ATEC~~, set L_{max} equal to L_{10} ~~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 in the~~ synchronously connected to the Western Interconnection ~~that and~~ operates in any AGC operating mode other than ATEC ~~removes the ATEC metric from its AGC system~~ 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

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hours per calendar quarter, for reasons including maintenance and testing. [Risk Factor: Lower]

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R3. BAs in the Western Interconnection shall be able to change their AGC operating mode ~~AGC operating mode~~ between ~~Flat Frequency (for blackout restoration); Flat Tie Line (for loss of frequency error telemetry); Tie Line Bias (this is the default NERC equation used for CPS); Tie Line Bias plus Time Error control (used in ATEC mode) with the calculation of CPS.~~ The ACE used for NERC reports shall be the same ACE as the AGC operating mode in use. [Risk Factor: Lower]

R4. ~~Regardless of the AGC operating mode~~ Each BA in the Western Interconnection shall compute its hourly Primary Inadvertent Interchange when hourly checkout is complete. If hourly checkout is not complete by 50 minutes after the hour, compute Primary Inadvertent Interchange with best available data the end of each hour. This hourly value shall be added to the appropriate accumulated Primary Inadvertent Interchange balance for either On-Peak or Off-Peak periods. [Risk Factor: Lower]

~~R4.1.~~ Each BA in the Western Interconnection shall use ~~its own~~ the change in Time Error ~~distributed by the Interconnection Time Monitor readings derived from the same frequency source it is using in the ACE Frequency Bias obligation term.~~

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R4.1.

~~R4.2.~~ All corrections to any previous hour Primary Inadvertent Interchange shall be added to the appropriate On- or Off-Peak on or off peak accumulated Primary Inadvertent Interchange.

~~R4.3.~~ Month end Inadvertent Adjustments are 100% Primary Inadvertent Interchange and shall be added to the appropriate On- or Off-Peak on or off peak accumulated Primary Inadvertent Interchange, unless such adjustments can be pin-pointed to specific hours in which case R4.2 applies. Each BA in the Western Interconnection shall use the ATEC equation when operating in the ATEC mode.

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~~R4.3.~~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; ~~a.~~ 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 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 correctly.

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M2. For Requirements R1 and 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 Automatic Generation Control (AGC) system.

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~~M2.~~**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.

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~~M3.~~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 On-Peak and Off-Peak~~on-peak and off-peak~~ accounts. These records must be available for review when requested or during compliance audits and readiness reviews.

M4.

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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

~~The 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 for the preceding calendar year (January – December) plus the current year.

~~Each The~~ 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.

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

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

1.3. 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:** ~~1 day~~ ← Time not in ATEC Mode ~~≤ greater than one day and less than or equal to 3~~ 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:** ~~3 days~~ ← Time not in ATEC Mode ~~greater than three days and less than or equal to~~ 5 ~~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:** ~~5 days~~ ← Time not in ATEC Mode ~~greater than five days and less than or equal to~~ 7 ~~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. ~~or Balancing Authority in the Western Interconnection cannot change operating mode~~
- 2.4. **Severe:** Time not in ATEC Mode ~~>~~ greater than 7 ~~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.

~~{Dave Taylor suggested the Violation Severity Levels were too complicated and suggested some sort of merging using a combination of the various types originally identified, connected together with 'or'. I have attempted to identify what I think he meant here. I simply combined with an or each of the first two types of Lower, Moderate, High, and Severe. I then took the last two types, which I think are really just yes or no types of violations and also included them in only one of the VSLs above with an or. The documented plan for fixing the violation is part of the mitigation that needs to be approved by the WECC compliance staff, and I personally think that including that in the VSL is incorrect. The inability to switch modes or the erroneous calculation could be moved to any VSL desired and could even be in the same one. This is a decision best made by the drafting team.~~

~~Our Delegation Agreement with NERC requires that once a violation occurs, a mitigation plan is required, and the Compliance Staff must approve the mitigation plan, including the projected completion date. An approved mitigation plan shields the entity in violation from subsequent penalties for the same violation, provided the entity in violation stays on track and completes the mitigation plan on schedule. Therefore, I don't think it is appropriate to include mitigation schedules in the various VSLs.~~

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

Performance Work Group Reply to BAL-STD-004-1- Automatic Time Error Correction Standard Comments

Bradley Calbick, Avista (AVA)

Avista (AVA) appreciates the opportunity to comment on the proposed Automatic Time Error Correction standard. I apologize for the late posting.

R1.1. The bounds on Lmax are too restrictive. The high bound for Lmax should be at least $1.5 * L_{10}$. But why even have an upper bound? Why not let an entity reduce their Iprimary as quickly as possible? Granted, there may be CPS2 implications for the entity, but why not let them make that choice?

Response: Thank you for your comments. The ATEC standard was originally implemented with L_{10} as the upper bound for automatic payback but this resulted in significant CPS 2 violations for several Balancing Authorities. Based on this field test experience, it was clear that there needed to be some limit on the amount of hourly automatic payback on Inadvertent Energy. The basic objective of the Automatic Time Error Correction methodology could still be achieved by setting a limit on Inadvertent Energy Payback that was less than L_{10} and spreading the payback over several hours if needed instead of trying to achieve 100% payback in 1 hour. This limited the risk of excess CPS 2 violations for Balancing Authorities due to large Inadvertent Energy offsets in their hourly ACE equation. These bounds are in place to minimize any CPS2 violations due to ATEC.

R4.4. The requirement for entities to synchronize time error to the nearest 0.001 second seems excessively precise. System Time Error can change by 0.001 second in less than a second. It is doubtful that we need this much precision in the measurement synchronization. How about just dropping the "nearest 0.001 seconds of the" part.

Response: We appreciate your comments. Synchronizing time error to the nearest 0.001 seconds has been a requirement in WECC since at least 2002. The "WECC Procedure for Time Error Control" requires synchronizing time error to the nearest 0.001 second of the system time error at 14:00:00 as distributed by the Interconnection Time Monitor. To keep it consistent the ATEC standard requires synchronizing to the nearest 0.001 second.

OPERATING COMMITTEE
VOTING REPRESENTATIVES

Name of Organization	Name of Voting Member	Voting Class					
Alberta Department of Energy (ADOE)	Kellan Fluckiger	SP					
Alberta Electric System Operator (AESO)	Doug Hincks	TP					
Alberta Energy and Utilites Board (AEUB)	Thomas Y.K. Chan	SP					
AltaLink L.P. (ALTA)	Rick Spyker	TP					
American Wind Energy Association (AWEA)	Ronald Lehr	TC					
Aquila Networks-WPC (WPE)	Leroy Lutes	TP					
Aquila Networks-WPC (WPE)	Al Logan	TC					
Arizona Corporation Commission (ACC)	Ray Williamson	SP					
Arizona Electric Power Cooperative, Inc.(AEPC)	Walter Bray	TC					
Arizona Power Authority (APA)	Michael Gazda	TC					
Arizona Public Service (AZPS)	Thomas Glock	TP					
ATCO Electric Ltd. (ATCO)	Blaine Beisiegel	TP					
Auriga Corporation (AUR)	Parkash Daryani	TP					
Automated Power Exchange, Inc. (APX)	Roger Yang	TC					
Avista Corp	Scott Kinney (alternate)	TP	Temp 6/12/07-6/16/07				
Basin Electric Power Cooperative (BEPC)	Matthew Stoltz	TP					
Basin Electric Power Cooperative (BEPC)	Becky Kern	TC					
Battelle Memorial Institute (BMI)	Matt Donnelly	TC					
Black Hills Power and Light Company (BHPL)	Gary Svarstad	TP					
Bonneville Power Administration-Power Bus Line (BPAP)	Fran Halpin	TC					
Bonneville Power Administration-TBL (BPAT)	Don Watkins	TP					
BP Alternative Energy North America (BPAE)	Darrel Thorson	TC					
British Columbia Hydro and Power Authority (BCHA)	Clement Ma	TC					
British Columbia Ministry of Energy & Mines (BCME)	Peter Ostergaard	SP					
British Columbia Transmission Corporation (BCTC)	Devinder Ghangass	TP					
British Columbia Utilities Commission (BCUC)	Lori Ann Zaozirny	SP					
Burbank Water & Power (BURB)	Xavier Baldwin	TC					
California British Columbia Transmission Co, LLC (CBC)	Anthony O. Duggleby	TC					
California Department of Water Resources (CDWR)	Terry P. Dennis	TC					

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California Electricity Oversight Board (CEOB)	Steve Ghadiri	SP					
California Energy Commission (CEC)	Mark Hesters	SP					
California Farm Bureau Federation (CFBF)	Karen Norene Mills	TC					
California ISO (CISO)	James McIntosh	TP					
California Office of Ratepayer Advocates (CORA)	Scott Cauchois	TC					
California Public Utilities Commission (CPUC)	Laurence Chaset	SP					
Calpine Corporation (CALP)	Frank Obertance	TC					
Cambridge Energy Solutions	(vacant)	TC					
Cargill Power Markets, LLC (CRGL)	Lester Welch	TC					
CE Obsidian Energy (CEOE)	Erik N. Saltmarsh	TP					
Central Arizona Water Conservation District (CAWC)	Gary Ijams	TP					
Chermac Energy Corporation	Greg Adams	TC					
Cinergy Services, Inc. (CINE)	Alan Cherkas	TC					
Citadel Energy Products LLC	(vacant)	TC					
Citigroup Energy Inc.	Louis Szablya	TC					
City and County of San Francisco - Hetch Hetchy Water & Power (HHWP)	Camron Samii	TP					
City of Anaheim (ANHM)	Sue Stephens	TP					
City of Glendale (GLEN)	Ned Bassin	TP					
City of Pasadena (PASA)	Phil Romero	TC					
City of Redding (RDNG)	Paul Cummings	TC					
City of Riverside (RVSD)	Dan R. McCann	TP					
Colorado Public Utilities Commission (COPC)	Gregory Sopkin	SP					
Colorado Springs Utilities (CSU)	Mike McAvoy	TP					
ColumbiaGrid	E. John Kaake	TC					
Comision Federal de Electricidad (CFE)	Manuel Diaz	TC					
Constellation Energy Commodities Group, Inc. (CCG)	Martin Proctor	TC					
Coral Power LLC	(vacant)	TC					
Deseret Generation & Transmission Co-op (DGT)	Phil Tice	TC					

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Deseret Generation & Transmission Co-op (DGT)	James Tucker	TP					
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Dynegy, Inc. (DYN)	Ali Amirali	TC					
Economic Insight (ECON)	David Ramberg	TC					
Edison Mission Marketing & Trading, Inc. (EMMT)	(vacant)						
El Paso Electric Company (EPE)	Jose Nevarez	TP					
El Paso Electric Company (EPE)	Hector Puente	TC					
EleQuant, Inc. (EQI)	Bob Stuart	TC					
Energy Northwest (ENW)	Jim Hughes	TC					
Energy Strategies LLC, (ESL)	Scott A. Gutting	TC					
ENMAX Corporation (ENMX)	Andre van Dijk	TP					
EPCOR Merchant and Capital L.P. (EMC)	Kelly Lail	TC					
Eugene Water & Electric Board (EWEB)	Dean Ahlsten	TC					
Farmington Electric Utility System (FARM)	Steve Henson	TP					
FortisBC (FBC)	Dave Cochrane	TP					
Fortis Energy Marketing & Trading Group (FEMT)	Jay Alexander	TC					
FPL Energy LLC (FPLE)	Mark J. Smith	TC					
Geo-Energy Partners-1983 Ltd. (GEO)	John J. McNamara	TC					
Gila Bend Power Partners, LLC (GBPP)	Adam Alexander	TC					
Gila River Power, L.P. (PGR)	Kenneth Parker	TC					
Great Basin Transmission, LLC (GBT)	Lawrence Willick	TC					
Harquahala Generating Company, LLC (HGC)	Dean Motl	TC					
Henwood Energy Services, Inc. (HESI)	Vikram Janardhan	TC					
Idaho Power Company (IPC)	Tessia Park	TP					
Idaho Power Company (IPC)	Dave Churchman	TC					
Idaho Public Utilities Commission (IPUC)	Marsha Smith	SP					
Imperial Irrigation District (IID)	Javier Esparza	TP					
KEMA Inc. (KEMA)	Joseph Moran	TC					
LCG Consulting (LCG)	Rajat Deb	TC					

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Los Alamos County (LAC)	Thomas L. Biggs	TC					
Los Angeles Dept. of Water and Power (LDWP)	Son T. Hoang	TP					
Merrill Lynch Commodities, Inc. (MLCI)	Darrell Antrich	TP					
Metropolitan Water District of Southern California (MWD)	Garry Chinn	TP					
Micron Technology Inc. (MTI)	Allen Perman	TC					
Mirant Americas, Inc. (MIR)	Phil Porter	TC					
Modesto Irrigation District (MID)	Toxie Burriss	TP					
Montana Alberta Tie Ltd. (MATL)	Lorry Wilson	SP					
Montana Dept. of Environmental Quality (MDEQ)	Art Compton	SP					
Montana Public Service Commission (MPSC)	(vacant)	SP					
Morenci Water & Electric Company (MWEC)	Charles T. (Tim) Summers	TP					
Morgan Stanley Capital Group Inc.	Kiran Gill	TC					
National Grid USA Service Co.	(vacant)	TC					
National Renewable Energy Laboratory (NREL)	Eduard Muljadi	TC					
Navigant Consulting, Inc. (NCI)	Ronald Nichols	TC					
Nevada State Office of Energy (NVOE)	George Caan	SP					
New Mexico Energy, Minerals & Natural Resources Dept. (EMNRF)	Joanna Prukop	SP					
New Mexico Public Regulation Commission (NMPRC)	R. Prasad Potturi	SP					
New Transmission Development Company (NTD)	Paul McCoy	TC					
North American Power Group, Ltd. (NAPG)	Michael Ruffato	TC					
Northern California Power Agency (NCPA)	Fred Young	TC					
Northwest Power and Conservation Council (NPCC)	Wally Gibson	SP					
NorthWestern Energy (NWMT)	Casey Johnston	TP					
NRG Power Marketing, Inc. (NRG)	Harry Halloway	TC					
Oak Creek Energy Systems, Inc. (OCES)	Harold M. Romanowitz	TC					
Oregon Department of Energy (OOE)	Philip Carver	SP					
Oregon Public Utility Commission (OPUC)	Jerry Murray	SP					
Pacific Gas & Electric (PG&E)	Kris Buchholz	TP					

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Pacific Gas & Electric (PG&E)	Joe Minkstein	TC					
PacifiCorp (PACM)	John Apperson	TC					
PacifiCorp (PAC)	Robert Williams	TP					
Pacific Northwest Generating Cooperative (PNGC)	Tom Haymaker	TC					
Peabody Energy Corporation (PBEC)	Rick Bowen	TC					
Platte River Power Authority (PRPA)	John R. Powell	TP					
Portland General Electric (PGE)	Mike Ryan	TP					
Portland General Electric (PGE)	Terri Peschka	TC					
Powerex (PWX)	Dan O'Hearn	TC					
PPL EnergyPlus, LLC (PPLE)	Rose Spear	TC					
PPL Montana, LLC (PPLM)	David Kinnard	TC					
PPM Energy, Inc. (PPM)	Laura Beane	TC					
Praxair, Inc. (PRAX)	Rick Noger	TC					
Public Service Company of Colorado (PSC)	Blane Taylor	TP					
Public Service Company of Colorado (PSC)	Steve Buening	TC					
Public Service Company of New Mexico (PNM)	Daniel Zientek	TP					
Public Service Company of New Mexico (PNM)	David Miller	TC					
Public Utilities Commission of Nevada (NPUC)	Paul Maguire	SP					
Public Utility District No. 1 of Chelan County (CHPD)	Hugh Owen	TC					
Public Utility District No. 1 of Clark County (CLAR)	James Sanders	TP					
Public Utility District No. 1 of Douglas County (DOPD)	Henry E. (Hank) LuBean	TP					
Public Utility District No. 2 of Grant County (GCPD)	Greg Lange	TC					
Puget Sound Energy, Inc. (PSE)	Dave Magnuson	TP					
Reliant Energy, Inc. (REI)	Thomas J. Bradish	TC					
RES America Developments Inc. (RES)	Stan Gray	TC					
Ridgeline Energy, LLC (RLE)	Darrel G. VanCoevering	TC					
Roseville Electric (RVE)	Michael Bloom	TC					
Sacramento Municipal Utility District (SMUD)	Vicken Kasarjian	TC					
Salt River Project (SRP)	Steven C. Cobb	TP					

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Salt River Project (SRP)	Mike Hummel	TC					
San Diego Gas & Electric Company (SDGE)	Scott Peterson	TP					
Saracen Merchant Energy LP (SME)	William Reed	TC					
Sea Breeze Pacific Regional Trans. Systems, Inc. (SBP)	Tony Duggleby	TC					
Seattle City Light (SCL)	Chris Turner	TC					
Sempra Energy Trading Corp. (SETC)	Roy Alvarez	TC					
Sempra Generation (SER)	Leslie Padilla	TC					
Shell Trading (STGP)	Hank Harris	TC					
Siemens Westinghouse Power Corporation (SWPC)	John Amos	TC					
Sierra Pacific Resources Transmission (SPR)	Rich Salgo	TP					
Sierra Pacific Resources Transmission (SPR)	Sheryl Torrey	TC					
Silicon Valley Power - City of Santa Clara (SNCL)	Jim Lauth	TC					
Snohomish County Public Utility District No. 1 (SNPD)	Anna Miles	TP					
Southern California Edison Company (SCE)	Thomas J. Botello	TP					
Southern California Edison Company (SCE)	John Pespisa	TC					
Southern Montana Electric Gen. & Trans. Cooperative, Inc.	(vacant)	TC					
Southwest Transmission Cooperative, Inc. (SWTC)	Shane Sanders	TP					
SouthWestern Power Group II, L.L.C. (SWPG)	Tom Wray	TC					
SUEZ Energy Marketing NA, Inc. (SUEZ)	Ken Lackey	TC					
SWRTA Class 2 Group (SC2G)	Dennis Delaney	TC					
Tacoma Power (TPWR)	Catherine Leone-Woods	TC					
Tenaska (TNSK)	Mark Young	TC					
The AES Corporation(AES)	C. J. Thompson	TP					
The Boeing Company (BOE)	Steven LaFond	TC					
TransAlta Utilities Corporation (TAUC)	Joanna Luong-Tran	TC					
TransCanada Energy Ltd. (TCP)	Ken Kunz	TC					
Transmission Agency of Northern California (TANC)	John Forman	TP					
Tri-State Generation & Transmission Association, Inc (TSGT)	Thomas A. Smith	TP					
Tri-State Generation & Transmission Association, Inc (TSMD)	Robert Wolaver	TC					

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Tucson Electric Power Company (TEP)	John Tolo	TP					
Turlock Irrigation District (TID)	Casey Hashimoto	TP					
TXU - Portfolio Management	Larry Gurley	TC					
U.S. Bureau of Reclamation (USBR)	Jay Seitz	TC	Temp 6/13/07-6/15/07				
Utah Associated Municipal Power Systems (UAMP)	Marshall Empey	TP					
Utah Committee of Consumer Services (UCCS)	Nancy Kelly	SP					
Utah Division of Public Utilities (DPU)	(vacant)	SP					
Utah Energy Office (UEO)	Laura Nelson	SP					
Utah Municipal Power Agency (UMPA)	Layne Burningham	TP					
Utah Public Service Commission (UPSC)	Ric Campbell	SP					
Utility System Efficiencies, Inc.	LeRoy Patterson	TC					
Valley Electric Association, Inc. (VEA)	W. J. Matheson	TC					
Washington State Office of Trade and Economic Development	Tony Usibelli	SP					
Washington Utilities & Transportation Commission (WUTC)	Alan Buckley	SP					
Wellhead Electric Company, Inc. (WECl)	Harold Dittmer	TC					
Western Area Power Administration (WAPA)	Edwad Hulls	TP					
Western Area Power Administration (WAPA)	Darren Buck	TP					
Western Area Power Administration (WAPA)	Ken Otto	TC					
Western States Energy Solutions (WSES)	Milton Percival	TC					
Westmoreland Coal Company (WLB)	David E. Welge	TP					
Williams Power Company, Inc.	David Reed	TC					
Wyoming Infrastructure Authority (WIA)	Steve Waddington	SP					
Wyoming Public Service Commission (WPSC)	Steve Oxley	SP					

OPERATING COMMITTEE
VOTING REPRESENTATIVES

Name of Organization	Name of Voting Member	Voting Class					

Implementation Plan for BAL-004-WECC-01- Automatic Time Error Correction Standard

Summary

The Automatic Time Error Correction (ATEC) procedure was approved and implemented in Western Electricity Coordinating Council (WECC) in 2003. In spring 2006, the WECC Operating Committee determined that with NERC standards moving towards mandatory compliance and sanctions, Automatic Time Error Correction along with the eight Tier 1 Standards that were recently approved by FERC was unique and essential to promote reliability in the Western Interconnection. But the committee decided that the ATEC procedure was not a high priority like the eight Tier 1 standards which were sanctionable under the existing WECC Reliability Management System (RMS). The committee decided to pursue approval of ATEC as a permanent standard through the regular approval process instead of the expedited process for urgent action interim standards identified in the WECC Process for Developing and Approving Standards.

Automatic Time Error Correction is an existing procedure. The Operating Committee assigned the Performance Work Group to be the drafting team with the task to convert the existing procedure to a regional reliability standard. The development of the ATEC standard followed the Process for Developing and Approving WECC Standards. The intent of the drafting team was to keep the format and template consistent with NERC standard template. Following is the summary of the drafting team efforts with the standard development process:

1. November 9, 2006, the Triage Committee (Standards Request Routing Committee) approved and assigned the ATEC Standard Request to the Performance Work Group (PWG) as the regional reliability standards drafting team.
2. November 14, 2006, PWG posted the first draft of the ATEC standard for 60-day comment period with comments due by January 15, 2007.
3. January 30, 2007, PWG posted for 30 days for Operating Committee pre ballot review its Response to Comments and the refined draft standard. Approval of the standard was requested at the March OC meeting. The OC members believed the draft standard needed more work and remanded the draft back to drafting team
4. March 13, 2007, PWG posted a second draft ATEC reliability standard with changes to meet the NERC standards template for OC pre-ballot review. OC intended to conduct an Email Ballot.
5. March 27, 2007, PWG retracted the March 13 posting to address NERC staff comments regarding Violation Risk Factors and Violation Severity Levels.
6. April 4-5, 2007, the drafting team met to revise the standard to address NERC staff comments.
7. April 12, 2007- the revised third draft standard was posted for 30 days with comments due by May 11, 2007.

8. May 14, 2007, PWG posted the third draft of the ATEC standard and reply to the comments for 30-day pre-ballot review. Operating Committee approval was requested at the June 2007 OC meeting.
9. June 14-15, 2007, the Operating Committee approved the Automatic Time Error Correction Standard at the Standing Committee meeting.
10. June 22, 2007, PWG posted the ATEC Standard for 30 days for WECC Board review and request board approval
11. July 26-27, 2007, the WECC Board approved the Automatic Time Error Correction standard.
12. August 7, 2007, PWG submits the ATEC standard, implementation plan, and Regional Reliability Standard Submittal Request to the NERC staff.
13. August 8, 2007 or before, NERC posts the ATEC Standard for a 45 day comment period.
14. September 22, 2007, respond to comments received during the NERC posting.
15. September 22, 2007, WECC requests the NERC Board to adopt the ATEC standard
16. October 22-23, 2007, request that the NERC BOT adopt the ATEC Standard
17. November 2007, NERC files the ATEC standard for FERC approval
18. January 1, 2008, the ATEC standard becomes effective.

Prerequisite Approvals

There are no other reliability standards that need to be approved or implemented before this standard can become effective.

Modified Standards

There are no standards that need to be modified or retired when the ATEC standard becomes effective.

Compliance with Standards

The responsible entities identified in the applicability section of the proposed standard who must comply with the requirements when standard becomes effective are Balancing Authorities in the Western Interconnection.

Proposed Effective Date

January 1, 2007 - The standard becomes effective on the first day of the first quarter, after applicable regulatory approval.

WECC BOARD OF DIRECTORS

Bob Anderson
Non Affiliated Director

David G. Areghini (Vice-Chair)
Salt River Project

Carolyn Barbash
Sierra Pacific Resources Transmission

Lee Beyer
Oregon Public Utility Commission

Duncan Brown
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Grant County

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Transmission Agency of Northern California

Maude Grantham-Richards
Farmington Electric Utility System

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Energy Strategies, LLC

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Utah Committee of Consumer Services

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Doug Little
British Columbia Transmission Corporation

Dale McMaster
Alberta Electric System Operator

Jesus Moya
Comision Federal de Electricidad

Tim Newton
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Idaho Public Utilities Commission

John H. Stout
Mariner Consulting Services

Gary Tarplee
Southern California Edison Company

Timothy H. Thuston
Williams Power Company, Inc.

Vickie VanZandt
Bonneville Power Administration

Judy Walsh
Non-Affiliated Director

Larry W. Weis
Turlock Irrigation District

Lori Ann Zaozirny
British Columbia Utilities Commission

Board of Directors Voting Results

BAL-004-WECC-01 Standard

Yes – 28

No – 0

Passes unanimously

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:

Completed Actions	Completion Date
1. Post Draft Standard for initial industry comments	November, 2006
2. Drafting Team to review and respond to initial industry comments	January, 2007
3. Drafting Team posted a second draft for industry comments	March, 2007
4. Drafting Team posted a revised second draft for industry comments	April, 2007
5. Drafting Team posted a third draft for Operating Committee approval	May, 2007
6. WECC Operating Committee ballots proposed standard	June, 2007
7. Drafting Team posted the ATEC Standard for Board approval	June, 2007
8. WECC Board of directors ballots proposed standard	July, 2007

Description of Current Draft:

The Automatic Time Error Correction (ATEC) component is now included in the NI_s term instead of as a separate term in the ACE equation. This only changes the order of the terms in the ATEC ACE equation, not the calculated ACE.

Future Development Plan:

Anticipated Actions	Anticipated Date
1. WECC submits ATEC Standard to NERC for posting	August, 2007
2. August NERC posts the ATEC Standard for 45 days	August, 2007
3. October NERC Board approval requested	October, 2007

Definitions of Terms Used in 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 Glossary.

Automatic Time Error Correction: A frequency control automatic action that a Balancing Authority uses to offset its frequency contribution to support the Interconnection's scheduled frequency.

Primary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of the area (n).

Secondary Inadvertent Interchange: The component of area (n) inadvertent interchange caused by the regulating deficiencies of area (i).

Comment [MSOffice1]: Note: this term is not used in the body of the standard and should not be listed here.

A. Introduction

Title: Automatic Time Error Correction

Number: BAL-004-WECC-01

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

Applicability:

1. Balancing Authorities (BA) that operate synchronously to the Western Interconnection.

Effective Date: On the first day of the first quarter, after applicable regulatory approval.

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 using the formula below:- [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).

$$NI'_S = NI_S - \frac{\Pi_{Primary}^{on/off\ peak}}{(1-Y)*H}$$

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).

Π_{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:

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

Π_{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.

Comment [MSOffice2]: 1.Note: The phrases "BA that is synchronously connected to the Western Interconnection" and "each BA in the Western Interconnection" are repeated throughout the standard. It appears "that operate synchronously to the Western Interconnection" should be deleted from this Applicability section. Also see comment in R3 below.

Comment [MSOffice3]: Note: by stating "after applicable regulatory approval" implies this standard will be phased in as regulatory approval is received in the US and Canada. Is that your true intent or is your intent to be effective after all applicable regulatory approval is received?

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 offset is 0.000 or +0.020 or -0.020.

- R1.1.** The absolute value of the WECC Automatic Time Error Correction term ~~is shall be~~ limited as follows:

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

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

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

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~~ **shall** 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 shall to~~ have ATEC out of service for ~~no more than a maximum of~~ 24 hours per calendar quarter, for reasons including maintenance and testing. [Risk Factor: Lower]

- R3.** BAs in the Western Interconnection shall be able to change their AGC operating mode between Flat Frequency (for blackout restoration); Flat Tie Line (for loss of frequency telemetry); Tie Line Bias; Tie Line Bias plus Time Error control (used in ATEC mode).

- R3.1.** The ACE used for NERC reports shall be the same ACE as the AGC operating mode in use. [Risk Factor: Lower]

- R4.** Regardless of the AGC operating mode each BA in the Western Interconnection shall compute its hourly Primary Inadvertent Interchange when hourly checkout is complete. If hourly checkout is not complete by 50 minutes after the hour, compute Primary Inadvertent Interchange with best available data. This hourly value shall be added to the appropriate accumulated Primary Inadvertent Interchange balance for either On-Peak or Off-Peak periods. [Risk Factor: Lower]

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

Comment [MSOffice4]: Note that the term "BAs" as used in this requirement is not clear if it applies to BAs that are synchronously connected or to all BAs. To be clear, while the applicability section in "A" above states that it applies to BAs that are synchronously connected, the phrases "BA that is synchronously connected to the Western Interconnection" and "each BA in the Western Interconnection" are repeated throughout the standard making it somewhat confusing.

- R4.2.** All corrections to any previous hour Primary Inadvertent Interchange shall be added to the appropriate On- or Off-Peak accumulated Primary Inadvertent Interchange.
- 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 Interchange, unless such adjustments can be pinpointed to specific hours in which case R4.2 applies.
- 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 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 for the preceding calendar year (January – December) plus the current 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.

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

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

1.3. 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.

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



Regional Reliability Standard Submittal Request

Region: WECC

Regional Standard Number: BAL-004-WECC-01

Regional Standard Title: Automatic Time Error Correction

Date Submitted: August 7, 2007

Regional Contact Name: Steven L. Rueckert

Regional Contact Title: Director of Standards

Regional Contact Telephone Number: (801) 582-0353

Request (check all that apply):

- Approval of a new standard
- Revision of an existing standard
- Withdrawal of an existing standard
- Urgent Action

Has this action been approved by your Board of Directors (if no please indicate date standard action is expected along with the current status (e.g., third comment period with anticipated board approval on mm/dd/year)):

- Yes
- No

WECC's Operating Committee approved the standard on June 14, 2007. The WECC Board of Directors approval the ATEC standard on July 27, 2007.

[Note: The purpose of the remaining questions is to provide NERC with the information needed to file the regional standard(s) with FERC. The information provided may to a large degree be used verbatim. It is extremely important for the entity submitting this form to provide sufficient detail that clearly delineates the scope and justification of the request.]

Concise statement of the basis and purpose (scope) of request:

WECC proposes that the Automatic Time Error Correction standard be approved as a Regional Reliability Standard by NERC. The purpose of this request is to:

- Ensure that Automatic Time Error Correction is an enforceable mandatory standard in the Western Interconnection

- Reduce the number of manual time error corrections
- Ensure continuous and equitable payback of accumulated Inadvertent Interchange between Balancing Authorities in the Western Interconnection
- Eliminate the need for accounting process and transmission allocation associated with bilateral inadvertent paybacks
- Ensure participation from all Balancing Authorities in the Western Interconnection
- Ensure that the BA causing the time error is responsible for correcting the error within a given amount of time

Concise statement of the justification of the request:

The Automatic Time Error Correction (ATEC) has been a regional reliability practice in WECC since 2003. The Automatic Time Error Correction is not covered by a continent wide standard at present. However, a SAR to include ATEC as a revision to NERC standard BAL-004-0 has been submitted. The Federal Energy Regulatory Commission (FERC) recently noted ATEC as an effective procedure for minimizing Inadvertent Interchange and the North American Energy Standards Board (NAESB), in the past, considered ATEC as one of the two potential solutions to Inadvertent Interchange Payback.

Automatic Time Error Correction has been an effective procedure in reduction of manual time error corrections and accumulated Inadvertent Interchange in the Western Interconnection. It has reduced the number of hours of off-nominal frequency operation for the interconnection. Time error is directly related to Inadvertent Interchange. A Balancing Authority can determine its contribution to the Interconnection time error by calculating its Primary Inadvertent Interchange (PII). The ATEC standard requires that each Balancing Authority calculate its Primary Inadvertent Interchange from its hourly Inadvertent Interchange and feedback the PII into its ACE equation to continuously correct for its portion of the time error. Although the maximum payback is bounded between limits, the continuous correction enables equitable payback of Inadvertent Interchange.

Based on the ATEC methodology, the requirement R1 is necessary to ensure that all Balancing Authorities continuously participate in Automatic Time Error Correction through their Automatic Generation Control (AGC) systems. The sub-requirement limits the payback amount to minimize any CPS2 violations for Balancing Authorities with large Frequency Bias settings. Requirement 1(R1) is not covered in the current NERC standard BAL-004-0.

Requirement 2 (R2) ensures that all BAs continuously operate to ATEC to avoid large accumulation of Inadvertent Interchanges. R2 limits BA ATEC suspension to a maximum of 24 hours per calendar quarter and requires that on suspension the Balancing Authority notifies all other Balancing Authorities in the Interconnection. Requirement 2 is not covered by the current NERC standard BAL-004-0.

Requirement 3 (R3) requires that BAs are able to switch between different AGC operating modes. R3 ensures that Balancing Authorities can switch to the appropriate AGC modes in case of islanding or loss of frequency telemetry. Requirement 3 (R3) is not covered by the current NERC standard BAL-004-0.

NERC standard BAL-006-0 R1 requires BAs to calculate and record hourly Inadvertent Interchange. The WECC ATEC standard in addition requires Balancing Authorities to calculate their Primary Inadvertent Interchange component. Requirement 4 (R4) is more stringent than NERC Standard BAL-006-0 Requirement 1.

Other – please attach or include as separate files:

- **The text of the regional reliability standard in MS Word format that:**

- has either been, or is anticipated to be, approved by the regional entity's board, and**
- is in a format consistent with the NERC template for reliability standards.**
- An implementation plan.**
- The regional entity standard drafting team roster.**
- The names and affiliations of the ballot pool members or names and affiliations of the committee and committee members that approved the submittal of the standard.**
- The final ballot results, including a list of significant minority issues that were not resolved, and**
- For each public comment period, a copy of each comment submitted and its associated response along with the associated changes made to the standard.**



**Regional Reliability Standard
Submittal Review Checklist**

Region: WECC

Regional Standard Number: BAL-004-WECC-01

Regional Standard Title: Automatic Time Error Correction

Date Standard Received: 8/8/09

Date Region Notified of Receipt: 8/9/07

Date Standard Reviewed: 8/13/07

Submittal Review Status:

Complete

Incomplete

Reviewed by:

Al Calafiore, Standards Development Coordinator

Maureen Long, Standards Process Manger

Approved by:

Review of Request for Completeness:

1. Was a concise statement of the basis and purpose (scope) of request supplied?

Yes

No

2. Was a concise statement of the justification of the request supplied?

Yes

No

3. Was the text of the regional reliability standard supplied in MS Word format?

Yes

No

4. Was an implementation plan supplied?

Yes

No

5. Was the regional entity standard drafting team roster supplied?

Yes

No

6. Were the names and affiliations of the ballot pool members or names and affiliations of the committee and committee members that approved the submittal of the standard supplied?

Yes

No

7. Were the final ballot results, including a list of significant minority issues that were not resolved, supplied?

Yes

No

8. For each public comment period, was a copy of each comment submitted and its associated response along with the associated changes made to the standard supplied?

Yes There were very few comments in two postings (there were also NERC comments regarding VSL and VRF that were addressed by adding VRF and VSL.

No

Review of Standard for Completeness:

Title

9. Is there a title that provides a brief, descriptive phrase identifying the topic of the standard?

- Yes
 No

Number

10. Does the standard have a unique identification number not already used by any NERC reliability standard?

- Yes
 No

Purpose

11. Does the purpose explicitly state what reliability-related outcome will be achieved by the adoption of the standard?

- Yes
 No

Applicability

12. Does this reliability standard clearly identify the functional classes of entities responsible for complying with the reliability standard, with any specific additions or exceptions noted?

- Yes
 No

13. Does this reliability standard identify the geographic applicability of the standard, such as the entire interconnection, or within a regional entity area?

- Yes
 No

14. Does this reliability standard identify any limitations on the applicability of the standard based on electric facility characteristics, such as generators with a nameplate rating of 20 MW or greater, or transmission facilities energized at 200 kV or greater or some other criteria?

- Yes
 No

Effective Date

15. Does the effective date start on the 1st day of the 1st quarter after entities are expected to be compliant?

Yes

No

16. Does the effective date provide time to file with applicable regulatory authorities and provide notice to responsible entities of the obligation to comply?

Yes

No

Requirements

17. Does each requirement identify the functional entity that is responsible and the action to be performed or the outcome to be achieved?

Yes

No

18. Does this reliability standard state one or more performance requirements, which if achieved by the applicable entities, will provide for a reliable bulk power system, consistent with good utility practices and the public interest?

Yes

No

19. Are the requirements free of additional comments or statements for which compliance is not mandatory, such as background or explanatory information?

Yes Need clarifications on all BAs, or Bas that operate synchronously to the Western interconnection; There are some statements in the requirements that could be taken as comments suggest to either make them requirements or delete them.

No

Violation Risk Factors

20. Is there a Violation Risk Factor (High, Medium, Lower) for each requirement?

Yes

No

Mitigation Time Horizons

21. Is there a Mitigation Time Horizon (Long-term Planning; Operations Planning; Same-day Operations; Real-time Operations; Operations Assessment) for each requirement?

Yes

No

Measures

22. Does each measure identify to whom the measure applies and the expected level of performance or outcomes required to demonstrate compliance?

Yes

No

23. Is each measure tangible, practical, and as objective as is practical?

Yes

No

24. Does each measure clearly refer to the requirement(s) to which it applies?

Yes

No Example part suggested as sub requirement for R3 needs measure

25. Is there a measure for each requirement?

Yes

No

Compliance Monitoring Responsibility

26. Is the 'Electric Reliability Organization' identified as the Compliance Monitor?

Yes

No

Compliance Monitoring Period

27. Does the standard identify the time period in which performance or outcomes is measured, evaluated, and then reset?

Yes

No

Data Retention

28. Does the standard identify the data retention requirements and assignment of responsibility for data archiving?

Yes

No

Additional Compliance Information

29. Does the standard identify the process that will be used to evaluate data or information for the purpose of assessing performance or outcomes?

Yes

No

30. Does the standard identify the specific data or information that is required to measure performance or outcomes?

Yes

No

31. Does the standard identify the entity that is responsible for providing data or information for measuring performance or outcomes?

Yes

No

Violation Severity Levels

32. Is there a Violation Severity Level (lower, moderate, high, severe) for violation of each of the requirements?

Yes While there are VSL its– Hard to find them, - not all sub requirements are addressed

No

Associated Documents

33. If there are standards or forms that are referenced within a standard, are the full names and numbers of the standard identified under, 'Associated Documents'.

Yes

No

Definitions

34. Are the definitions used and provided in the standard consistent with the NERC definitions.

Yes Included the acronym for AETEC in the definition – no justification for use of secondary inadvertent interchange

No

Other Observations:

35. Are there any additional comments?

Yes

No

Comment Report Form for BAL-004-WECC-1 Automatic Time Error Correction

The BAL-004-WECC-1 Standard Drafting Team thanks all commenters who submitted comments on the WECC BAL-004-WECC-1 Standard. This Standard was posted for a 45-day public comment period from September 21, 2007 through November 5, 2007. The Standard Drafting Team asked stakeholders to provide feedback on the standard through a special Standard Comment Form. There were two sets of comments from two companies representing two of the nine Industry Segments as shown in the table on the following pages.

In this 'Consideration of Comments' document stakeholder comments have been organized so that it is easier to see the responses associated with each question. All comments received on the standard can be viewed in their original format at:

ftp://www.nerc.com/pub/sys/all_updl/standards/rrs/WECC_Comments_BAL_004_WECC_01_.pdf

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President and Director of Standards, Gerard Adamski at 609-452-8060 or at gerry.adamski@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

¹ The appeals process is in the Reliability Standards Process Manual:
<http://www.nerc.com/standards/newstandardsprocess.html>.

Comment Report Form for **BAL-004-WECC-1 Automatic Time Error Correction**

Committer	Organization	Industry Segment								
		1	2	3	4	5	6	7	8	9
Howard F. Illian	Energy Mark, Inc.								X	
Bart McManus	Bonneville Power Administration	X								

Index to Questions, Comments, and Responses

1. Was the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 developed in a fair and open process, using the Process for Developing and Approving WECC Standards? page 5
2. Does the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 pose an adverse impact to reliability or commerce in a neighboring region or interconnection? page 5
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4. Does the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 pose a serious and substantial burden on competitive markets within the interconnection that is not necessary for reliability? page 6
5. Does the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 meet at least one of the following criteria? page 7
 - The proposed standard has more specific criteria for the same requirements covered in a continent-wide standard
 - The proposed standard has requirements that are not included in the corresponding continent-wide reliability standard
 - The proposed regional difference is necessitated by a physical difference in the bulk power system.
6. The Applicability section of the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 states: page 8

Applicability:

1. Balancing Authorities (BA) that operate synchronously to the Western Interconnection.

While the requirements start out by stating:

R1. Each BA that operates synchronously to the Western Interconnection shall

R2. Each BA that is synchronously connected to the Western Interconnection and operates

R3. BAs in the Western Interconnection shall ...

R4. Regardless of the AGC operating mode each BA in the Western Interconnection shall ...

Do you feel it is clear which entities must comply with each requirement and sub-requirement in the WECC Automatic Time Error Correction Standard BAL-004-WECC-01?

7. **Do you have any additional comments not addressed above relative to the WECC Automatic Time Error Correction Standard BAL-004-WECC-01? page 9**

Comment Report Form for BAL-004-WECC-1 Automatic Time Error Correction

1. Was the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 developed in a fair and open process, using the Process for Developing and Approving WECC Standards?

Summary Consideration:

Commenter	Yes	No	Comment
Howard F. Illian	X	X	The process was developed with announcements only distributed to those on the WECC exploder. Anyone expecting NERC to inform them of the regional standards that are under development did not receive these announcements.
<p>Response: WECC and the drafting team followed the Process for Developing and Approving WECC Standards, which is a fair and open process that was approved by FERC for developing regional reliability standards. As part of this process, the standard drafting team posted the standard twice on the WECC website for public comment. Comments to these posting were due January 23, 2007 and May 11, 2007. The drafting team posted the Automatic Time Error Correction Standard (ATEC) for two additional 30-day comment periods before WECC's Operating Committee and Board of Directors conducted ballots of the standard. In addition, NERC noticed on its public website that WECC was developing the ATEC standard by March 2003. NERC also posted the ATEC standard for a 45-day public comment period from September 21, 2007 through November 5, 2007. Since the drafting team followed the Process for Developing and Approving WECC Standards, the ATEC standard was developed in a fair and open process for developing and approving WECC Standards.</p>			
Bart McManus	X		
<p>Response: Thank you.</p>			

2. Does the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 pose an adverse impact to reliability or commerce in a neighboring region or interconnection?

Commenter	Yes	No	Comment
Howard F. Illian	X	X	If an Automatic Time Error Correction Standard is to be implemented on an interconnection, it should meet the basic rules for regional standards. This standard as currently written does not meet the basic criteria required by FERC in that regional standards be more restrictive than national standards. The Automatic Time Error Correction Standard is less restrictive than BAL-001 because it reduces the effectiveness of the CPS1 measure. If the WECC Automatic Time Error Correction Standard is implemented in its current form, it will set precedence for the other interconnections. That precedence will create a significant problem for implementation of Automatic Time Error Correction on the other interconnections. For example the Eastern Interconnection would be unable to implement a different Automatic Time Error Correction Standard than that on the Western Interconnection because the EI would be unable to justify a difference between the two standards. The result would eventually be the delay in implementation of a similar standard on the Eastern Interconnection or a

Comment Report Form for BAL-004-WECC-1 Automatic Time Error Correction

Commenter	Yes	No	Comment
			change in the standard already implemented on the Western Interconnection.
<p>Response: The drafting team believes the WECC ATEC Standard meets the criteria for Regional Standards in that hourly inadvertent payback and time error correction are utilized in addition to manual processes that exist in the NERC reliability standards. The ATEC process works well in a region that is also a separate interconnect. The ATEC standard does not adversely impact the reliability or commerce in a neighboring region or interconnection. The ATEC standard is more stringent than BAL-004, the NERC manual time error correction standard. It has proven to be an effective tool for controlling time error in WECC. WECC represents the Interconnection, which has come to agreement on the terms and tool to achieve hourly payback of inadvertent interchange reliably. NERC and the Eastern Interconnection (EI) have the right to develop a continent wide ATEC standard. The Eastern Interconnection may find alternate means to achieve the same goals as the WECC ATEC standard. CPS1 effectiveness is measured as the relationship between a BA's ACE and interconnection frequency error. It is true that a non-zero sum of NIs can create a frequency offset while showing all BAs as (100%) compliant. The creation of a frequency offset will not create a detriment to reliability provided WECC selects an appropriate epsilon1 and provided the frequency performance remains within the present Western Interconnection profile. When CPS1 was created, the NERC Operating Committee spent time tuning the value of epsilon in each interconnection. As long as the WECC frequency profile does not violate the original directive of the NERC Operating Committee (profiles to be no worse than history at the time of original analyses) there will not be a reliability problem. The WECC Performance Work Group and NERC Operating Committee are assigned to watch the whole profile and if necessary put steps in place to limit the degree to which auto-payback is allowed to prevent excessive frequency error in the very short term due to the net imbalance.</p>			
Bart McManus		X	
Response: Thank you.			

3. Does the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 pose a serious and substantial threat to public health, safety, welfare, or national security?

Commenter	Yes	No	Comment
Howard F. Illian	X		The WECC Automatic Time Error Correction Standard as currently written poses a serious threat to the reliability of the interconnection. Please see the comments attached under a separate cover titled "Comments on WECC Auto Time Error Correction Method.
<p>Response: The drafting team disagrees with the suggestion that the WECC ATEC Standard poses any serious threat to public health, safety, welfare, national security, or the reliability of the Western Interconnection. Reliability Coordinators may intervene in the rare situation where the payback is impacting transmission flows or frequency.</p> <p>The Reliability Coordinator is responsible for ensuring that the generation-demand balance is maintained within its Reliability Coordinator Area, which, in turn, ensures that the Interconnection frequency remains within acceptable limits. WECC identified the root causes for time error as errors in measurement and schedules (both frequency and Net Interchange) and inadequate control system or telecommunications. Monitoring any negative impacts to Interconnection frequency caused by the WECC algorithm is not significantly different from monitoring impacts to Interconnection frequency caused by errors in measurement, schedules, and inadequate control systems. For the Western Interconnection</p>			

Comment Report Form for BAL-004-WECC-1 Automatic Time Error Correction

Commenter	Yes	No	Comment
			<p>implementing the WECC ATEC algorithm resulted in cost reductions over the algorithm proposed by Howard Illian. It is estimated that the cost to implement the algorithm proposed by Howard Illian is at a minimum \$50,000 per Balancing Authority (close to the original implementation costs) plus the costs for auxiliary activities including meetings, documentation, acceptance testing, checkout of interfaces, field testing, training personnel, etc. There are 35 Balancing Authorities in the Western Interconnection. WECC estimates there is at least a cost saving of \$1,750,000 by implementing the WECC ATEC approach.</p> <p>Since the Reliability Coordinator may adjust or halt the time error correction if it identifies any negative impacts, the drafting team does not believe there is any significant reliability risk to the Interconnection caused by the imprecision in the algorithm.</p>
Bart McManus		X	
Response: Thank you.			

4. Does the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 pose a serious and substantial burden on competitive markets within the interconnection that is not necessary for reliability?

Commenter	Yes	No	Comment
Howard F. Illian		X	
Response: Thank you.			
Bart McManus		X	
Response: Thank you.			

5. Does the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 meet at least one of the following criteria?

- The proposed standard has more specific criteria for the same requirements covered in a continent-wide standard
- The proposed standard has requirements that are not included in the corresponding continent-wide reliability standard
- The proposed regional difference is necessitated by a physical difference in the bulk power system.

Commenter	Yes	No	Comment
Howard F. Illian		X	The proposed standard has less specific requirements than the continent-wide standard. It defines a new implementation of the ACE Equation that fails to meet previously implied criteria concerning the ACE Equation and that would be

Comment Report Form for BAL-004-WECC-1 Automatic Time Error Correction

Commenter	Yes	No	Comment
			<p>detrimental to interconnection reliability. The problem with this proposed standard is that it requires the implementation of imbalanced interchange schedules. Imbalanced interchange schedules were specifically eliminated from the NERC standards when the CPS1 criterion was developed by removing the unilateral inadvertent payback term from the ACE Equation. This was done because the technical basis of the CPS1 measure requires balanced schedules for the measure to be valid and provide the guarantee that the interconnection frequency will be bounded. The industry took ten years to develop a technically justified measure for interconnection frequency control and that measure has been accepted by the industry for an additional ten years. If the Automatic Time Error Correction Standard is implemented as written, it will invalidate the technical basis for the CPS1 measure. Implementation of this standard would effectively reduce the effectiveness of the BAL-001 Standard and is therefore less stringent than the existing continent-wide standard.</p>
<p>Response: The drafting team disagrees with the commenter. The WECC ATEC standard is over and above those manual procedures currently in the continent-wide standard (see BAL-004, the NERC manual time error correction standard). ATEC has proven to be an effective tool for controlling time error in WECC. The WECC process is objective, centrally managed, and understood by all participants. While the WECC ATEC standard can have a slight impact on frequency within an hour, the Reliability Coordinator may adjust or halt the time error correction if any negative impacts are seen. The drafting team does not believe it poses a threat to reliability. The WECC has been using this procedure, and the Western Interconnection's frequency performance has not degraded.</p> <p>The commenter offers another approach for the measurement of CPS for implementing an automatic time error correction standard. This approach has not been vetted or field tested. The WECC approach has been field tested since 2003. During the field test no significant threats to reliability have been identified. In fact the WECC ATEC standard has proven measurable and very effective. The WECC ATEC Standard may have a minor impact in calculated CPS and frequency within an hour, but this is a reasonable tradeoff of one reliability objective for another (i.e. some grace in CPS while paying back inadvertent on the one hand vs. smaller inadvertent balances and fewer manual time error corrections on the other). The Federal Energy Regulatory Commission (FERC) recently noted the WECC ATEC as an effective procedure for minimizing Inadvertent Interchange, and the North American Energy Standards Board (NAESB), in the past, considered ATEC as one of the two potential solutions to Inadvertent Interchange Payback.</p> <p>Bonneville Power Administration (BPA) compared its CPS1 score for July and December 2007 with and without the ATEC term in the ACE equation. For July 2007 CPS1 without the ATEC term was 194% (the present NERC CPS1 standard) and 197% with the ATEC term. For December 2007 CPS1 without the ATEC term was 188% and 189% with the ATEC term. Compliance with the present NERC CPS standard is 100%. Present Balancing Authority CPS1 scores in the Western Interconnection are generally well above the 100% minimum NERC requirement. (The lowest reported CPS1 score during the last two years was 108%, but typically CPS1 scores are above 148%.) Based upon the BPA findings and the fact Balancing Authorities are generally well above 100%. It is very unlikely there would be any significant threat to reliability by adding the ATEC term to the ACE equation.</p>			
Bart McManus	X		

Comment Report Form for BAL-004-WECC-1 Automatic Time Error Correction

Commenter	Yes	No	Comment
Response: Thank you.			

6. The Applicability section of the WECC Automatic Time Error Correction Standard BAL-004-WECC-01 states:

Applicability:

2. Balancing Authorities (BA) that operate synchronously to the Western Interconnection.

While the requirements start out by stating:

R1. Each BA that operates synchronously to the Western Interconnection shall

R2. Each BA that is synchronously connected to the Western Interconnection and operates

R3. BAs in the Western Interconnection shall ...

R4. Regardless of the AGC operating mode each BA in the Western Interconnection shall ...

Do you feel it is clear which entities must comply with each requirement and sub-requirement in the WECC Automatic Time Error Correction Standard BAL-004-WECC-01?

Commenter	Yes	No	Comment
Howard F. Illian	X		
Response: Thank you.			
Bart McManus	X		
Response: Thank you.			

7. Do you have any additional comments not addressed above relative to the WECC Automatic Time Error Correction Standard BAL-004-WECC-01?

Commenter	Yes	No	Comment
Howard F. Illian	X		I have attached a technical paper that provides the technical basis for my comments and provides an alternative implementation for Automatic Time Error

Comment Report Form for BAL-004-WECC-1 Automatic Time Error Correction

Commenter	Yes	No	Comment
			Correction that does not reduce the effectiveness of other existing standards. It is my understanding that the development process that we are using to develop new standards is designed to eliminate the implementation of technically deficient standards. This standard as written is technically deficient.
<p>Response: The drafting team disagrees that the WECC ATEC Standard poses any threat to the reliability of the Western Interconnection. The commenter offers another approach for the measurement of CPS. However, a slight loss of precision is not the same as a threat to reliability. The WECC ATEC Standard may have a minor impact in calculated CPS and frequency within an hour, but this is a reasonable tradeoff of one reliability objective for another (i.e. some grace in CPS while paying back inadvertent on the one hand vs. smaller inadvertent balances and fewer manual time error corrections on the other). As noted above based upon the BPA findings and the fact Balancing Authorities are generally well above 100%, it is very unlikely there would be any significant threat to reliability by adding the ATEC term to the ACE equation.</p> <p>The Reliability Coordinator is responsible for ensuring that the generation-demand balance is maintained within its Reliability Coordinator Area, which, in turn, ensures that the Interconnection frequency remains within acceptable limits. WECC identified the root causes for time error as errors in measurement and schedules (both frequency and Net Interchange) and inadequate control system or telecommunications. Monitoring any negative impacts to Interconnection frequency caused by the WECC algorithm is not significantly different from monitoring impacts to Interconnection frequency caused by errors in measurement, schedules, and inadequate control systems. For the Western Interconnection implementing the WECC ATEC algorithm resulted in cost reductions over the algorithm proposed by Howard Illian. Since the Reliability Coordinator may adjust or halt the time error correction if it identifies any negative impacts, the drafting team does not believe there is any significant reliability risk to the Interconnection caused by the imprecision in the algorithm.</p>			
Bart McManus	X		The ATEC in WECC has a proven track record and should be continued.
Response: Thank you.			

Automatic Time Error Correction Standard
Consideration of Comments
February 15, 2008

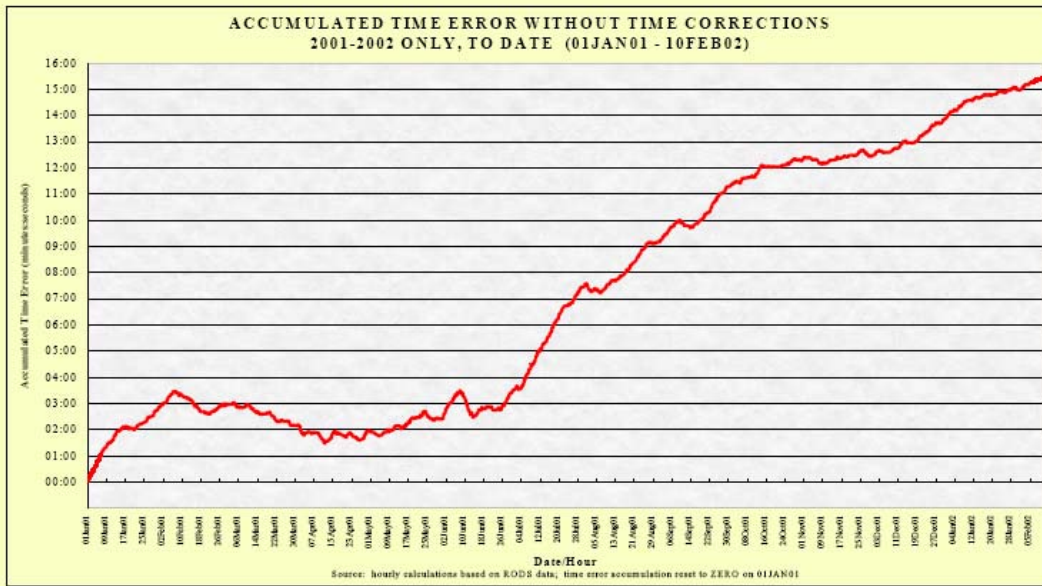
The Automatic Time Error Correction Standard drafting team submitted to NERC its consideration of Comments on January 2, 2008. After reviewing the consideration of comments and at the request of the NERC staff, WECC is providing a refined consideration of comments (see attachment) and a summary of the main issues.

BACKGROUND

The WECC Compliance Monitoring and Operating Practices Subcommittee (CMOPS) [now Operating Practices Subcommittee (OPS)] identified the following issues regarding its manual time error procedure and criterion.

1. During 2000, Control Areas (now Balancing Authorities) were conducting over 50 manual time error corrections each month. CMOPS believed the number of manual correction was excessive.
2. Despite the large number of manual time error corrections conducted each month, the accumulated time error continued to increase (see Chart “TE Is Still Accumulating” below).

TE is still Accumulating



May 30-31, 2002

WECC Auto Time Error Correction Workshop

7

CMOPS requested that the Performance Work Group (PWG) review the Interconnections manual time error procedure and criterion. During its review, PWG identified the following root causes for time error.

1. There were errors in Measurement
 - a. Frequency
 - b. Net Interchange
2. Errors in Schedules
 - a. Frequency
 - b. Net Interchange
3. Inadequate Control System or Telecommunications
4. Energy Conversion units responsive to Automatic Generation Control (AGC)

PWG indicated that time error costs money since there were 23 minutes of accumulated time error in 2000 requiring 425,500 MWh of correction. More importantly, PWG indicated there were 425,500 MWh of poor system performance.

PWG recommended developing an automatic time error correction standard that would mitigate the root causes of time error. Therefore, it recommended the development of the BAL-STD-004-1 (now BAL-004-WECC-1) Automatic Time Error Correction Standard (ATEC). The ATEC Standard is designed to ensure continuous and automatic reduction in time error and accumulated Inadvertent Interchange in the Western Interconnection. The standard requires Balancing Authorities (BA) in the Western Interconnection to utilize ATEC continuously in their Automatic Generation Control (AGC) system. ATEC has been a Regional Criterion in the WECC since 2003.

The basic refinement to the ACE equation is to include the ATEC term in the Net Scheduled Interchange term in the ACE equation. The WECC Operating Committee indicated strong support for field testing the standard.

The minority opinions discussed at the time of ballot in 2003 for a field test were:

1. Not comfortable with measurement and sanctions; the standard should allow for many more short term suspensions of ATEC instead of 24 hours per quarter.
2. Concern about approving a WECC standard without NERC approving WECC's interpretation of NERC standards.
3. Not sure of what the interim compliance process will be once the standard is approved at WECC but is in the process for approval at NERC and FERC

The field test of an ATEC Standard began in 2003. Based upon the experience gained during the field test, the drafting team made refinements to the proposed ATEC standard and posted those refinements for comment. The comment periods are as follows:

- § WECC Comment period: November 14, 2006 through January 15, 2007
- § WECC Comment period: April 12, 2007 through May 11, 2007

- § WECC Operating Committee ballot posting period began May 14, 2007
- § WECC Board posting period began June 22, 2007
- § NERC posting period: September 21, 2007 through November 5, 2007

Automatic Time Error Correction has been an effective procedure in reduction of manual time error corrections and accumulated Inadvertent Interchange in the Western Interconnection. It has reduced the number of hours of off-nominal frequency operation for the interconnection. Time error is directly related to Inadvertent Interchange. A Balancing Authority can determine its contribution to the Interconnection time error by calculating its Primary Inadvertent Interchange (PII). The ATEC standard requires that each Balancing Authority calculate its Primary Inadvertent Interchange from its hourly Inadvertent Interchange and feedback the PII into its ACE equation to continuously correct for its portion of the time error. Although the maximum payback is bounded between limits, the continuous correction enables equitable payback of Inadvertent Interchange. The Federal Energy Regulatory Commission (FERC) recently noted ATEC as an effective procedure for minimizing Inadvertent Interchange and the North American Energy Standards Board (NAESB), in the past, considered ATEC as one of the two potential solutions to Inadvertent Interchange Payback.

Support for the WECC ATEC Standard has been strong with the WECC Operating Committee voting 38 in favor with one no vote and five abstentions and with the WECC Board of director ballot voting 28 to zero in favor of the standard. The only lack of support for the WECC ATEC standard has come from Howard F. Illian, Energy Mark, Inc in response to the NERC posting.

HOWARD ILLIAN COMMENTS ON THE WECC ATEC METHOD

Howard F. Illian, Energy Mark, Inc. submitted comments and paper titled “Comments on the WECC Auto Time Error Correction Method.” to the NERC that criticized WECC’s standard regarding Automatic Time Error Correction Standard BAL-004-WECC-01 (ATEC standard). In his paper Howard Illian states the following concerns:

1. The basic problem is the WATEC Method uses intentionally imbalanced interchange schedules to correct time error without adjusting the scheduled interconnection frequency.
2. The failure to have balanced interchange schedules is the first condition that causes the WATEC Method to fail to comply with the necessary conditions to maintain the integrity of the CPS1 criteria.
3. The hidden adjustment in scheduled frequency caused by the imbalanced interchange schedules is the second condition that causes the WATEC Method to fail to maintain the integrity of the CPS1 criteria.
4. The WECC Automatic Time Error Correction Standard as currently written poses a serious threat to the reliability of the interconnection.

WECC REPLY

The WECC Performance Work Group, the drafting team for WECC ATEC standard, respectfully disagrees with Mr. Illian's assertions that the ATEC standard does not maintain the integrity of the CPS1 criteria and poses a serious threat to the reliability of the interconnect.

1. WATEC Method uses intentionally imbalanced interchange schedules to correct time error without adjusting the scheduled interconnection frequency

Response: CPS1 effectiveness is measured as the relationship between a BA's ACE and interconnection frequency error. It is true that a non-zero sum of NIs can create a frequency offset while showing all BAs as compliant. The creation of a frequency offset should not create a detriment to reliability. The WECC approach has been field tested since 2003. During the field test no significant threats to reliability have been identified. In fact the WECC ATEC standard has proven measurable and very effective. The WECC ATEC Standard may have a minor impact in calculated CPS and frequency within an hour, but this is a reasonable tradeoff of one reliability objective for another (i.e. some grace in CPS while paying back inadvertent on the one hand vs. smaller inadvertent balances and fewer manual time error corrections on the other). The Federal Energy Regulatory Commission (FERC) recently noted the WECC ATEC as an effective procedure for minimizing Inadvertent Interchange and the North American Energy Standards Board (NAESB), in the past, considered ATEC as one of the two potential solutions to Inadvertent Interchange Payback.

Bonneville Power Administration (BPA) compared its CPS1 score for July and December 2007 with and without the ATEC term in the ACE equation. For July 2007 CPS1 without the ATEC term was 194% (the present NERC CPS1 standard) and 197% with the ATEC term. For December 2007 CPS1 without the ATEC term was 188% and 189% with the ATEC term. Compliance with the present NERC CPS standard is 100%. (The lowest CPS1 score reported during the last two years was 108%, but typically CPS1 scores are above 148%.) Often CPS1 scores in the Western Interconnection are close to 200%. Present Balancing Authority CPS1 scores in the Western Interconnection are generally well above the 100% minimum NERC requirement. Based upon the BPA findings and the fact Balancing Authorities are generally well above 100%, it is very unlikely there would be any negative impact to reliability, much less a significant threat, based upon the difference in the CPS terms by adding the ATEC term to the ACE equation.

The Reliability Coordinator is responsible for ensuring that the generation-demand balance is maintained within its Reliability Coordinator Area, which, in turn, ensures that the Interconnection frequency remains within acceptable limits. WECC identified the root causes for time error as errors in measurement and schedules (both frequency and Net Interchange) and inadequate control system or telecommunications. Monitoring any negative impacts to Interconnection frequency caused by the WECC algorithm is not significantly different from

monitoring impacts to Interconnection frequency caused by errors in measurement, schedules, and inadequate control systems.

2. The failure to have balanced interchange schedules is the first condition that causes the WATEC Method to fail to comply with the necessary conditions to maintain the integrity of the CPS1 criteria.

Response: It is true that a non-zero sum of NIs can create a frequency offset while showing all BAs as (100%) compliant. The creation of a frequency offset will not create a detriment to reliability provided WECC selects an appropriate epsilon1 and provided the frequency performance remains within the present Western Interconnection profile. In addition the frequency offset is limited in the ATEC algorithm to L_{10} . When CPS1 was created, the NERC Operating Committee spent time tuning the value of epsilon in each interconnection. As long as the WECC frequency profile does not violate the original directive of the NERC Operating Committee (profiles to be no worse than history at the time of original analyses) there will not be a reliability problem or detriment to the integrity of CPS1.

The WECC ATEC Standard may have a minor impact in calculated CPS1 and frequency within an hour, but this is a reasonable tradeoff of one reliability objective for another (i.e. some grace in CPS while paying back inadvertent on the one hand vs. smaller inadvertent balances and fewer manual time error corrections on the other). The Federal Energy Regulatory Commission (FERC) recently noted the WECC ATEC as an effective procedure for minimizing Inadvertent Interchange and the North American Energy Standards Board (NAESB), in the past, considered ATEC as one of the two potential solutions to Inadvertent Interchange Payback.

Bonneville Power Administration (BPA) compared its CPS1 score for July and December 2007 with and without the ATEC term in the ACE equation. For July 2007 CPS1 without the ATEC term was 194% (the present NERC CPS1 standard) and 197% with the ATEC term. For December 2007 CPS1 without the ATEC term was 188% and 189% with the ATEC term. Compliance with the present NERC CPS standard is 100%. Present Balancing Authority CPS1 scores in the Western Interconnection are generally well above the 100% minimum NERC requirement. Based upon the BPA findings and the fact Balancing Authorities are generally well above 100%, it is very unlikely there would be any negative impact to reliability, much less a significant threat, based upon the difference in the CPS terms by adding the ATEC term to the ACE equation.

The WECC Performance Work Group and NERC Operating Committee are assigned to watch the whole profile and if necessary put steps in place to limit the degree to which auto-payback is allowed to prevent excessive frequency error in the very short term due to the net imbalance. The integrity of the WECC ATEC standard retains the integrity of the CPS1 Standard.

3. The hidden adjustment in scheduled frequency caused by the imbalanced interchange schedules is the second condition that causes the WATEC Method to fail to maintain the integrity of the CPS1 criteria.

Response: The drafting team disagrees. The WECC ATEC standard is over and above those manual procedures currently in the continent-wide standard (see BAL-004, the NERC manual time error correction standard). ATEC has proven to be an effective tool for controlling time error in WECC. The WECC process is objective, centrally managed, and understood by all participants. While the WECC ATEC standard can have a slight impact on frequency within an hour, the Reliability Coordinator may adjust or halt the time error correction if any negative impacts are seen. The drafting team does not believe it poses a threat to reliability. The WECC has been using this procedure, and the Western Interconnection's frequency performance has not degraded.

The commenter offers another approach for the measurement of CPS for implementing an automatic time error correction standard. This approach has not been vetted or field tested. The WECC approach has been field tested since 2003. During the field test no significant threats to reliability have been identified. In fact the WECC ATEC standard has proven measurable and very effective. The WECC ATEC Standard may have a minor impact in calculated CPS and frequency within an hour, but this is a reasonable tradeoff of one reliability objective for another (i.e. some grace in CPS while paying back inadvertent on the one hand vs. smaller inadvertent balances and fewer manual time error corrections on the other). The Federal Energy Regulatory Commission (FERC) recently noted the WECC ATEC as an effective procedure for minimizing Inadvertent Interchange and the North American Energy Standards Board (NAESB), in the past, considered ATEC as one of the two potential solutions to Inadvertent Interchange Payback.

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4. The WECC Automatic Time Error Correction Standard as currently written poses a serious threat to the reliability of the interconnection.

The drafting team disagrees the WECC ATEC standard poses a serious threat to reliability. The commenter offers another approach for the measurement of CPS for implementing an automatic time error correction standard. This approach has not been vetted or field tested. The WECC approach has been field tested since 2003. During the field test no significant threats to reliability have been identified. In fact the WECC ATEC standard has proven measurable and very effective. The WECC ATEC Standard may have a minor impact in calculated CPS and frequency within an hour, but this is a reasonable tradeoff of one reliability objective for another (i.e. some grace in CPS while paying back inadvertent on the one hand vs. smaller inadvertent balances and fewer manual time error corrections on the other). The Federal Energy Regulatory Commission (FERC) recently noted the WECC ATEC as an effective procedure for minimizing Inadvertent Interchange and the North American Energy Standards Board (NAESB), in the past, considered ATEC as one of the two potential solutions to Inadvertent Interchange Payback.

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Exhibit D

The Standard Drafting Team Roster