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Organization (1 Responses)
Group Name (5 Responses)
Lead Contact (5 Responses)
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Question 5 Comments (6 Responses)

Group
Arizona Public Service Company
Janet Smith, Regulatory Affairs Supervisor
Yes
No
No
No
Yes
Group
Salt River Project
Chris Chavez for Mike Gentry
Yes
No
No
No
Yes
Individual
Howard Illian
Energy Mark, Inc.
No
Comment 1: The information presented fails to create a sufficient record necessary to support the variance requested. The variance as presented fails to address the issues that resulted in the previous rule, ie. the reasons that the NERC Resources Subcommittee issued its original interpretation requiring the use of the ACE Equation as defined by NERC. This proposed standard (variance) fails to include any discussion of these issues. The information also fails to present any new information that would counter the previous ruling by the Federal Energy Regulatory Commission (FERC) that rejected

the variance request in 2008. Therefore, the record presented for justification for approval of this standard is deficient because it fails to address any of the issues previously raised that were determined to be adequate grounds for rejection of this variance at that time. Comment 2: At a minimum, a record should be created to address the issues resulted in rejection of this variance previously.
Yes
Comment 3: The proposed standard sets a precedence with respect to the definition of Tie-line Bias Control that is detrimental to reliability for all interconnections. Time Error Correction (TEC) is available as part of Tie-line Bias Frequency Control which is use by the North American interconnections to coordinate the control among the BAs that make up the multi-BA interconnections. Although the NERC Operating Committee has determined that TEC is a commercial service, the continuation of this service remains open for discussion. Rules governing Tie-line Bias Frequency Control are described by Cohn (1967): 1) The requirement that all portions of the interconnection be included in one area or another, so that the sum of all area generation, loads and losses is the same as total system generation load and losses; 2) The need to have the algebraic sum of all area net interchange schedules equal to zero; 3) The use of a common scheduled frequency for all areas; 4) The absence of metering or computational errors. An additional basic requirement is that all BAs on the interconnection use a common ACE Equation as defined below as: ACE = (NIA - NIS) - 10B (FA - FS) - IME where: • NIA is the algebraic sum of actual flows on all tie lines. • NIS is the algebraic sum of scheduled flows on all tie lines. • B is the Frequency Bias Setting (MW/0.1 Hz) for the Balancing Authority. The constant factor 10 converts the frequency setting to MW/Hz. • FA is the actual frequency. • FS is the scheduled frequency. FS is normally 60 Hz but may be offset to effect manual time error corrections. • IME is the meter error correction factor typically estimated from the difference between the integrated hourly average of the net tie line flows (NIA) and the hourly net interchange demand measurement (megawatt-hour). This term should normally be very small or zero. The last term in the ACE Equation corrects for metering errors as required by the basic rules. It is acceptable to modify the ACE Equation as long as the four basic rules stated by Cohn are followed. The proposed variance fails to follow these four basic rules. As a consequence, implementation of the proposed variance will fail to meet the requirements necessary to qualify as Tie-line Bias Control. Comment 4: The variance as proposed will not be in compliance with Standard BAL-003-0.1b — Frequency Response and Bias; Requirement R3. Each Balancing Authority shall operate its Automatic Generation Control (AGC) on Tie Line Frequency Bias, unless such operation is adverse to system or Interconnection reliability. Comment 5: The variance as proposed will not be in compliance with Standard BAL-005-0.1b — Automatic Generation Control, Requirements R6. The Balancing Authority's AGC shall compare total Net Actual Interchange to total Net Scheduled Interchange plus Frequency Bias obligation to determine the Balancing Authority's ACE. Single Balancing Authorities operating asynchronously may employ alternative ACE calculations such as (but not limited to) flat frequency control. If a Balancing Authority is unable to calculate ACE for more than 30 minutes it shall notify its Reliability Coordinator. and R7. The Balancing Authority shall operate AGC continuously unless such operation adversely impacts the reliability of the Interconnection. If AGC has become inoperative, the Balancing Authority shall use manual control to adjust generation to maintain the Net Scheduled Interchange. Comment 6: This proposed variance seeks to implement a commercial service in a manner that fails to meet the reliability requirements in current reliability standards. This alone should be sufficient grounds for the rejection of this variance.
Yes
Comment 7: The proposed variance poses a serious and substantial threat to reliability of the interconnection because it is being recommended for implementation without the presentation of any discussion or formal record with respect to its impact on the reliablity of the interconnection. Comment 8: The proposed variance requests a change in the definition of Area Control Error (ACE) without providing a record to indicate the impact that this change will have on reliability. ACE is the basic measure used to determine performance for reliability purposes. ACE is used in multiple reliability standards and requirements as a basic measure to indicate the performance of the Balancing Authority. This variance is proposed without the creation of any record indicating the impact that this change in the definition of ACE will have on these other reliability standards. Comment 9: ACE is used in the calculation of the CPS1 requirement. This CPS1 requirement as implemented provides the guarantee that: if all Balancing Authorities on an interconnection comply with the CPS1 requirement, then the Root Mean Square of the Frequency Error for that

interconnection will be less than Epsilon 1. If the proposed variance is implemented, this guarantee will no longer be a result of compliance with the CPS1 requirement. Therefore, implementation of the proposed variance will be detrimental to reliability because it will invalidate other reliability measurements based upon ACE. There is no discussion in the record, either qualitive or quantative, indicating the impact of this change in the ACE definition on CPS1. Comment 10: ACE is used in the calculation of the CPS2 requirement. This CPS2 requirement is the only requirement addressed with respect to the impact that the ACE definition has on compliance. The discussion of the impact on the implementation of this variance was qualitive only. The record fails to include any discussion of the quantitive impact of this variance on the quantitive effect on CPS2. Comment 11: A new requirement, Balancing Authority ACE Limit (BAAL), is under field trial on all of the North American interconnections. This new requirement uses ACE as one of the basic parameters in its calculation. BAAL also comes with a reliability guarantee; If all Balancing Authorities are within their BAAL then the interconnection will have a frequency error less than the BAAL frequency limit. Implementation of the proposed variance will also invalidate this guarantee. Therefore, implementation of the proposed variance will be detrimental to reliability because it will invalidate other reliability measurements based upon ACE. There is no discussion in the record, either qualitive or quantative, indicating the impact of this change in the ACE definition on BAAL. Comment 12: ACE is used in the calculation of the Recovery Criterion in Standard BAL-002-0 — Disturbance Control Performance requirement R4. If the proposed variance is implemented, this required recovery will be affected. Therefore, implementation of the proposed variance could be detrimental to reliability because it will change other reliability measurements based upon ACE. There is no discussion in the record, either qualitive or quantative, indicating the impact of this change in the ACE definition on the Disturbance Control Standard. Comment 13: This request for a variance fails to meet the requirement that it demonstrate that the variance is not inconsistent with or less stringent than the NERC reliability standard. Comments 8 through 12 above provide evidence that this requirement is less stringent than the NERC reliability requirements indicated in the above comments 8 through 12. Comment 14: In its request the drafting team indicated that, "Replacing the NERC ACE equation with an ATEC ACE equation is an alternative methodology with the same reliability objective as the existing BAL-001-0.1a standard." Although the alternative methodology has the same reliability objective as the existing standard, this fact does not relieve the alternative methodology from having a sound technical basis consistent with the maintenance of reliability. This proposed alternative methodology contains many technical errors and misrepresentations that make it unsuitalbe for implementation as currently defined. Comment 15: The justification for the change in the ACE Equation to implement ATEC begins with the concept of Primary Inadvertent Interchange and Secondary Inadvertent Interchange. This concept as developed by Nathan Cohn fails to have a sound technical basis. This can be easily demonstrated. A careful reading of the technical paper upon which the ATEC methodology is based reveals the following quotation. "A primary component of over-generation or under-generation in one area is matched by the sum of related (N-1) secondary components of under-generation and over-generation respectively in other areas. Similarly, a primary component of export or import in one area is matched by the sum of related (N-1) secondary components of import or export respectively in other areas." If this statement is true then all Primary Inadvertent must be exactly matched by Secondary Inadvertent. The counter example is easily provided by considering an hour that has inadvertent but no time error change. In this case all inadvertent for the hour is defined as Primary Inadvertent. Therefore, the basis for the Primary Inadvertent / Secondary Inadvertent calculation presented in the Cohn technical paper is incorrect in its development. Therefore, the stated methodology lacks a sound technical basis for acceptance. In addition, the concept of "stranded inadvertent" is refuted by this example. Inadvertent cannot be stranded without validation of the concept of Primary Inadvertent Interchange and Secondary Inadvertent Interchange. However, minor modifications in the suggested methodology would correct the technical errors and make it appropriate for implementation. This commentor fails to understand why technically competent parties continue to ignor the obvious technical errors in this methodology and resist correcting them. Comment 16: Although Cohn is mistaken in his analysis of Primary Inadvertent Interchange and Secondary Inadvertent Interchange, he does provide a valid way to concurrently correct time error and payback inadvertent interchange. The method he ultimately recommends is mathematically equivalent to the independent payback of traditional inadvertent interchange and the independent correction of time error with both methods using the same period over which the payback and correction are implemented. This concurrent TEC and inadvertent payback is performed with a single process simply because Cohn choses to implement both as schedules represented with MW offsets as opposed to the traditional method of providing inadvertent payback with MW offsets and TEC with frequency offsets. He also choses to implement both with the same implementation period (H). Since the concept of "stranded inadvertent" is not valid, there is no reason to assume that the inadvertent payback implementation period and the TEC implementation period should be the same. Comment 17: The inadvertent payback and TEC are implemented over the same period in the proposed variance. This period is defined as H in the standard and is set at 3 hours. There is no justification offered and no discussion with respect to how this parameter was determined. Therefore, there is no record to support the setting of this parameter. Comment 18: The setting of Lmax and limiting the Time Error and Inadvertent Payback adjustment to less than this value is the reason that the method suggested is not compatible with Tie-line Bias Control. When the PII payback is limited to this value, the resulting interchange schedules fail to meet the criteria that they balance and unilateral scheduled interchange results. This unilateral interchange is the reason that the method suggested does not conform to appropriate Tie-line Bias control methodology. If this single limitation is removed from the standard, it will conform to Tie-line Bias Control and can easily be modified to be compatible with all of the ACE based reliability requirements. Comment 19: The justification for the PII limit is based upon the amount of scheduled payback within the Lmax limit. However, one of the reliability effects of the limit is based upon the difference between the Lmax limit and the scheduled payback without the limit since this is the amount of unilateral payback that is required by the limit. There has been no attempt to evaluate this difference and determine its affect qualitively and quantitively on the other reliability measure based upon the current definition of ACE. Comment 20: Experience on the Eastern Interconnection has demonstrated that TEC has an impact on reliability. This is the reason that NERC is investigating the elimination of TEC. These investigations have revealed the following: 1) time error correction in any form detrimentally impacts reliability because it requires an offset in scheduled frequency from 60 Hz moving the operating point closer to the underfrequency and overfrequency relay limits; 2) setting the frequency offset to values smaller than the 20 mHz value currently in use will reduce the detrimental reliability effects. Comment 21: It has also been demonstrated that a reduction in the equivalent frequency offset used for time error correction will result in a reduction the the probability risk associated with TEC. The proposed variance sets Lmax above the value equivalent to the current 20 mHz offset of frequency. As a result, the proposed method could create greater reliability risk than the current 20 mHz offset and put the interconnection at greater reliability risk than the current manual method. As recommended above, a lower reliability risk associated with a smaller frequency offset can be achieved by setting H to a value significantly greater than 3 hours. For example, a 20 mHz offset results in a maximum rate of correction of 1.2 seconds per hour and a 10 mHz offset results in a maximum rate of correction of 0.6 seconds per hour. If H were set at 24 hours, then the proposed method would result in a 0.4167 seconds per hour correction rate assuming a maximum time error of 10 seconds (10/24), significantly reducing the reliability risk due to frequency offset. Comment 22: By considering the choice of how quickly to implement the payback of inadvertent and the correction of time error, those selecting the value of the H parameter are also determing the risk that the payback terms will exceed reliability limits with respect to the magnitude of additional transmission flows required to implement the TEC and inadvertent payback. Choosing a small value for H insures that the effective frequency offset for TEC and the effective inadvertent payback will be large and have a correspondingly large reliability risk. Choosing a large value for H insures that the effective frequency offset for TEC and the effective inadvertent payback will be small and have a correspondingly small reliability risk. As an alternative to setting a value for Lmax, the drafting team could choose a large value for H and eliminate the need to set a value for Lmax while reducing the reliability impact of the frequency offset for TEC and the reliability impact on transmission loading for inadvertent payback. Comment 23: Since there is no advantage in using the same H value for both TEC and inadvertent payback, the standard should be modified to allow separate H values to be used for TEC and inadvertent payback allowing each to be set independently based upon the effect the implementation period has on reliability associated with each. The use of 24 hours for TEC and a value between 24 and 168 hours for Inadvertent Interchange Payback should provide acceptable values for two automatically calculated values without contributing detrimentally to reliability. Comment 24: When TEC and Inadvertent Interchange Payback are separated into two separate calculations, the advantage of representing them both as MW values is eliminated. This allows the correction of one of the other problems associated with implementation of the proposed variance; the inability to represent the scheduled frequency correctly. Since scheduled frequency is used not only in the ACE Equation but also in the CPS1 and BAAL calculations, it is necessary to calculate the frequency offset explicitly for these two reliability measures. This is more easily achieved

when the calculation for TEC is performed in the frequency domain and the calculation for Inadvertent Interchange Payback is performed in the MW domain. This is the final and necessary step required to modify the proposed method into a method that is fully compatible with Tie-line Bias control and the reliability measures that are based upon ACE. Comment 25: The resulting ACE Equation would then include two additional terms; 1) a term that would provide a balanced set of schedules for the interconnection that would be based upon the Inadvertent Interchange account of each Balancing Authority divided by the Hi value used for Inadvertent Interchange Payback, and 2) a term that would provide the same frequency offset for all Balancing Authorities on the interconnection that would be based on the Time Error divided by the Ht value used for TEC.
Yes
Comment 26: The delivery of Time Error Correction and Inadvertent Interchange Payback services results in a reduction in reliability of the interconnection as the result of the delivery of commercial services.
No
Comment 27: The proposed variance results in all ACE based measures being less stringent from a reliability perspective than the current standard interpretation. This is inconsistent with the requirement that regional standards be more stringent than the NERC continent wide standard. It therefore fails to meet the requirements to be considered as a regional standard. Comment 28: It might be acceptable to claim that the only way to achieve the desired result is the proposed variance, but these comments provide methods that are totally compatible with the NERC continent wide standards that could be implemented in place of the proposed variance. Therefore, the issue in not technical, the issue is whether or not it is worth the effort to conform with the continent wide standard. This question should have only one answer, comply with the continent wide standards.
Group
PacifiCorp
Sandra Shaffer
Yes
No
No
No
Yes
Group
Bonneville Power Administration
Chris Higgins
Yes
No
No
No
Yes
Group
Constellation Energy Control and Dispatch

Nicholas L. Hall
Yes
No
No
No
Yes
The proposed variance does meet these criteria, yet still poses some concerns, as follows: CECD agrees that a variance reconciling control ACE and NERC reporting ACE brings important clarity and consistency to this standard for Balancing Authorities in the Western Interconnection. However, CECD has some concerns about the Implementation Plan proposed in the Variance Request. The Variance Request assumes that the transition to calculating and reporting CPS performance using ATEC ACE would be a minimally invasive process, with little impact. However, this assumption has not been verified. The WECC assumption fails to recognize that no Balancing Authority is currently equipped to calculate and report CPS according to ATEC adjusted ACE, as WECC and NERC previously considered this activity a violation of BAL-001. Thus, all Balancing Authorities in the Western Interconnection will have to reconfigure various elements of their energy management systems to accommodate this variance. The time and effort required to make these modifications is not clear, and the proposed Implementation plan provides only a brief window for making these modifications. The implementation plan is particularly problematic for entities with Balancing Authority assets in multiple interconnections since this variance will require the energy management system in use to employ several separate and distinct mechanisms for calculating CPS and NERC ACE, depending on the interconnection in which a particular asset is located. The drafting team should take these concerns into consideration and revise the Implementation Plan, allowing for a more flexible time-frame and/or process for Balancing Authorities to make this change. The issue resolved by this variance poses no significant risk to reliability and a Balancing Authority should not risk violation of this standard because of an overly aggressive implementation.