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Group
LG&E and KU Services
Brent ingebrightson
Yes
LG&E and KU Services suggest removing "reliability risk" from the end of the first sentence in the BAAL definition
No
The posted BAL-001-1 shows the Purpose Statement as: Purpose: To control Interconnection frequency within defined limits. The purpose statement in the draft standard is preferred over the Purpose Statement as shown in Question 3.
Yes
LGE and KU Services is a participant in the BAAL Field Test and support the implementation of the BAAL standard.
LG&E and KU Services suggests that the SDT clarifies that the standard will not require monthly reporting as if currently performed by the BA (CPS1 and BAAL) to SERC/NERC/FERC but that the BA will need to evaluate CPS1 monthly and BAAL continuously.
Individual
Robert Blohm
Keen Resources Asia Ltd.

Yes
Yes
Yes
Delete "in support of interconnection frequency". It's redundant, and childishly repetitive of the same term. You don't control something to within limits in order to undermine (= not support) those limits!
Yes
Yes
Yes
Yes
Yes
No
No. In particular this sentence on page 5 of the background document provides no technical justification for the the "3" in the plus/minus 3epsilon FTL: "BAAL was derived based on reliability studies and analysis which defined a Frequency Trigger Limit (FTL) bound measured in Hz." The analysis commissioned by NERC without tender to an outside software vendor was demolished in the extensive posted comments by 2 statistical experts, California ISO and NPCC. The analysis was junked together with the rejected proposed standard as NERC proceeded to form a new drafting team to rebuild the standard. 3 has been demonstrated throughout the field test to be too tight in terms of generating too many BAAL exceedences to be addressed immediately by the BA. The BA needs to wait at least 5 minutes for enough of these exceedences to go away to leave a feasible/manageable number begin to addressing. Such waiting jeopardizes reliability. It is much more prudent to raise the "3" to somewhere between 4 or 5 to generate exceedences small enough in number to be feasible/manageable to begin addressing immediately upon occurrence. Setting the FTL at a high enough threshold where the number of exceedences becomes feasible or manageable enough to be addressed immediately upon occurrence instead of 5 or more minutes after they have begun if FTL is set at too low a multiple of epsilon, is least expensive and most favorable to reliability. The field test has not "proved" that 3 is the proper multiple just because there has been no blackout. Otherwise we can go home until the next blackout. Instead the field test has produced the data supporting the contention that the limit is too tight for reliability because it generates too many short-lived exceedences and thereby encourages waiting to address the exceedences that will persist and be very serious. After the demise of the previous proposed standard, NERC elected to change policy and stop commissioning research and therefore development of any thorough technical justification for the present proposed standard. In other words, NERC can no longer justify a reliability standard by any documented scientific procedure of its own.
The technically unjustified tight multiple of "3" epsilon (versus between 4 and 5) in the Frequency Trigger Limit (FTL) on page 10 (Attachment 2) of the Standard violates (1) the requirement that reliability standards not interfere with the "just and reasonable" economic basis for market efficiency and (2) the requirement that reliability standards improve not reduce reliability. Point (2) is covered in my comments to Question 9. The multiple of 3 raises reliability cost not just unnecessarily, but perversely in exchange for less reliability. That interferes with the normal "just and reasonable" cost/price basis for markets that must allow for costs of necessary reliability provided those costs are allocated in a way that is just and reasonable and not perverse to reliability. It is well-known that, by Bayesian "multiplication" of "conditional" probability, the probability of being at the FTL is "multiplied by" (not "added to") the "conditional" probability of the system's having a once-in-ten-years event provided it is at the FTL, and is an infinitesimal fraction of the probability of the system's reaching a once-in-ten-years event. Probabilities are fractions of 1. A fraction times a fraction is an infinitesimal. Contrary to the transmission/congestion engineer's deterministic practice of "adding" transmission

capacities/contingencies, contingent/conditional probabilities are multiplied, not added. Transmission management/planning practices are not applicable to generation/load frequency control. Accordingly the FTL, regardless of whether the multiple of epsilon is 3, 4 or 5, is already in the realm one-event-in-hundreds, thousands of years. So, there is no issue that a higher ("5") or lower ("3") multiple of epsilon is in a "dangerous" zone of unreliability. The issue is more of how "unnecessarily" tight the limit is in terms of adding to the cost of operations that participants then seek to avoid by ignoring the limit for the initial five or more minutes of a BAAL exceedence and thereby more than undo the supposed reliability benefit of the tightness!

Group

ISO's Standards Review Committee

Terry Bilke

No

The definition of reporting ACE is nearly identical to the current definition of ACE, but the appendix adds complexity. There should be no need for this new definition. The description of the definition in the attachment is overly prescriptive. It has a redundant and more restrictive requirement for frequency resolution than BAL-005. It also created a new term, Net Metering Error that is more prescriptive than how metering error is corrected for today.

No

While we agree that these four entities comprise the four major Interconnections, the term is used scores of times in other standards. It is beyond the scope of this drafting team to redefine expectations of other standards.

Yes

Yes

1)While we agree that the 12 month rolling average performance is evaluated monthly, that does not mean that substandard performance in one month should result in many months of repeat violations until that bad month rolls out the average. Non-compliance should only accrue if the BA is not under a mitigation plan and has new months of non-compliant performance. 2)The purpose of averaging is to account for both the good and bad performances experienced over the 12 months in question. We suggest that the SDT develop a criterion that identifies a given month performance as being out of limits and that the performance is so good or so bad that the monthly value either be dropped from the averaging or it be substituted with the limiting value.

Yes

Yes

Yes

Yes

The drafting team may want to look at how small BAs are impacted by R2. The CPS curve for small BAs has a wider tail. The performance expectations may not be the same.

No

1) If the background document is expected to be used just to explain the team's work, we have no issue with it. If it is expected to replace the current Performance Standards Reference Guidelines in the NERC Operating Manual, the document lacks significant detail. 2) While it is not material to the new standard, the A1 criteria is not properly stated. Under A1, ACE needed to cross zero at least once in every ten minute period of the hour and that the total non-crossings had to be less than 10 percent of all periods.

1)The concept of a definition is to provide a generic baseline that allows other descriptive items to be identified. For example: An Interconnection could be defined as a collection of loads, suppliers and transmission that operates synchronously. The Eastern Interconnection would be understood to be

that group of ... 2)BAAL should be incorporated within a requirement as a performance level. It should not be a definition. 3)Similarly with ACE. ACE is defined as $S-A + B \Delta f$. The scan rate details are subsets of that definition; they are not the definition. 4)The applicable entities should not be defined by the methodology they use to meet the standard, nor should requirements be placed in the Applicable entity definition. 5)Sections 4.1.1 and 4.1.2 are unclear as to which entities are subject to complying with the standard. Further, the word "calculates" in both Sections turn these Sections into requirements rather than specifying the entities being responsible for meeting Requirements R1 and R2. 6)Inferring from Section 4.1.3, we interpret these Sections to mean that the "Balancing Authority that provides Overlap Regulation Service to another Balancing Authority". In that case, a requirement to hold the service providing BAs responsible for calculating its CPS1 performance after combining its Reporting ACE and Frequency Bias Settings with the Reporting ACE, and Frequency Bias Settings of the Balancing Authority receiving the Regulation Service, would be necessary. Same applies to the BAAL calculation implied in Section 4.1.3

Individual

Mike Goodenough

pwx

Yes

Yes

No

No, the Purpose Statement is inadequate. The purpose of the standard should be to control BAA ACE within defined limits in support of Interconnection Frequency, and to prevent BAA ACE from having a detrimental impact to other entities on the grid. In Order No. 890, the Federal Energy Regulatory Commission (FERC or the Commission) recognized the potential for inadvertent energy flows between adjacent BAs to both jeopardize reliability and to cause undue harm to customers on the grid. Such inadvertent energy flows are driven by the size of each BA's ACE, as primarily contained by CPS2 under the current BAL-001, and the new proposed BAL-001 standard. Powerex believes that the development of the BAL-001 standard based on the current purpose statement will allow entities to create deliberate inadvertent flows within the standards boundaries, without regard to the impact to transmission customers on the grid. This may result in substantial curtailments to transmission customers in direct contravention of the Commission's open access transmission principles.

Yes

No

No. The standard is inadequate. The requirement will allow BA's to operate in a way that could significantly increase risk to the interconnection, for up to 30 minutes, without penalty. Worse, it will allow BA's to "sawtooth": operate outside the BAAL limit for extended periods of time (up to 30 minutes), change operations for as little as one minute to bring their ACE back into the BAAL limit to reset the 30 minute clock, and then again start operating outside the BAAL limit, and do so cyclically, for extended periods. This behavior was exhibited to some extent by several BAs during the field trial, so there should be every expectation that this type of behavior will continue, if not spread and worsen, if this new standard was put in place. In the Background Document for the standard the drafting team pointed out that CPS2 "... allows significant hours when a Balancing Authority's ACE values are unbounded." Because R2 of the proposed standard will allow BAs to cyclically operate outside the BAAL limit as described above, the problem of BA's operating with an unbounded ACE could actually become worse under the proposed standard, not better. Powerex notes that no technical justification has been put forward as to why a BAA should be able to operate outside the BAAL limit for 30 minutes. We recommend that the drafting team consider a shorter period (e.g. 5 minutes). As well, to prevent the sawtooth behavior, Powerex recommends that a monthly maximum be set on the number of times a BAA can exceed the BAAL limit (e.g. 5 times per month). Another concern is that the requirement will allow unlimited unscheduled flow, across interties when the actual system frequency is close to the scheduled frequency. There seems to be a disregard for the fact that unscheduled flows can have a significant detrimental impact on scheduled flows. Curtailments to scheduled flows is one of the main tools used to keep the system operating within

limits during period of high unscheduled flows, effectively giving unscheduled flows priority access over the rights paid for by OATT customers (scheduled flows). For example, during the RBC trial in the West, the number of curtailments to e-tags went up dramatically as a result of unscheduled flows across path 36, as reported by the WECC Performance Workgroup in the December 2011 Quarterly Report on the RBC Field Trial. Most recently, we have seen a record number of curtailments across path 66. In 2011, there were a total of 61 Path 66 events of Step 4 or higher (see WECC Unscheduled Flow Reduction Guideline). Already in 2012, we have seen 741 Path 66 events of step 4 or higher (as of mid June). It is a significant concern that the higher unscheduled flows resulting from the RBC field trial are contributing to the curtailments. If the proposed standard is approved it should be expected that this issue will continue, and perhaps spread to other parts of the grid. (We discuss this issue in more detail in our response to Question 11.) Also of concern is the dramatic impact that the proposed BAAL limit will have on the frequency error of the Interconnections. In WECC specifically, it has been shown that the frequency error has been steadily increasing since the start of the RBC field trial. As the drafting team has pointed out in the Background Document for this proposed standard, reliability is reduced when Interconnection frequency is moved farther from the scheduled value. In light of the fact that replacing CPS2 with the proposed BAAL limit has already been shown to have the effect of moving the frequency away from the scheduled frequency value, the adoption of proposed standard would have the overall effect of reducing reliability. We would also like to note that, under the WECC field trial, BAs that are operating with BAAL have been requested by the Reliability Coordinator to further limit their ACE due to transmission overload issues in the Interconnection caused by the operations of another BA (e.g. BA #1 is interconnected with BA#2, and BA#1's inadvertent flows cause an SOL violation at the interconnection between BA#2 and BA#3, so the RC requests BA#2 to change their operation). This should be a serious concern: A BA operating in compliance with the proposed BAL-001 reliability standard (during the RBC field trial) is causing or contributing to a violation of another reliability standard (TOP) and potentially causing another entity to be in violation.

No

No

No. As stated above in our response to Question 5, because of the significant deficiencies of Requirement 2, a BA would be able to operate in a way that could have a significant impact on reliability, for the majority of the time, without facing any penalty or sanction.

No

No. As stated above in our response to Question 5, because of the significant deficiencies of Requirement 2, a BA would be able to operate in a way that could have a significant impact on reliability, for the majority of the time, without facing any penalty or sanction.

No

No. Powerex feels the Background Document does not reference or explain any of the findings of the RBC trial discussed in Question 5 that should be of concern, i.e. BAs operating outside the BAAL limit in a cyclical manner, the detrimental impact of unscheduled flows on the grid, and the increase in frequency error.

In Order No. 890, the Federal Energy Regulatory Commission (FERC or the Commission) recognized the potential for unscheduled energy flows between adjacent BAAs both to jeopardize reliability and to cause undue harm to customers on the grid. The Commission stated, at P 703, in regards to the existing framework for inadvertent energy: "However, if there is evidence that it is no longer sufficient to maintain reliability, or is allowing certain entities to lean on the grid to the detriment of other entities, the Commission has authority under FPA section 215 to direct the ERO to develop a new or modified standard to address the matter." Powerex believes that the development of the BAL-001 standard based on the current purpose statement will allow entities to create deliberate inadvertent flows within the standards boundaries, without regard to the impact to transmission customers on the grid. This may result in substantial curtailments to transmission customers in direct contravention of the Commission's open access transmission principles of Order 890. BAL-001 may also be in conflict with FERC Order 693 (P 397). In that order, the Commission noted that while the control performance standard metric (BAAL limit in R2) is useful in identifying trends relating to poor regulating practices, specification of minimum reserve requirements to be maintained at all times would complement the control performance standard metrics by providing real-time requirements necessary for proper control. "[T]he control performance standard metric is a lagging indicator and,

as such, does not provide a good indication that necessary amounts of regulating reserve are being carried at all times.” The capability to be able to meet a BA’s expected intra-hour imbalances, with a significant degree of confidence, should be achieved prospectively each hour. It is not sufficient to reduce a BA’s regulation to a level designed only to meet the performance standards retrospectively. Though a prospective balancing reserve requirement as contemplated in Order 693 may be missing from standards currently in place, the inherent limits in the current CPS2 are strict enough such that the need for a prospective minimum requirement is reduced. However, the relaxation of the control performance measures in BAL-001 make it imperative that the minimum reserve requirements contemplated in Order 693 are included.

The recent increase in intermittent resources, such as wind and solar generation, has increased balancing challenges due to variability in generation, driving actual generation to differ from scheduled generation. By eliminating CPS2 and replacing it with the relaxed BAAL limit, the proposed performance standard does not address the potential for a single BA to lean on the grid with deliberate unscheduled energy flows or inadvertent energy, taking any accumulated benefits for itself and possibly even jeopardizing reliability and/or harming other entities on the grid. The detrimental impacts of deliberate inadvertent flows to load customers and transmission customers on the grid could be substantial. Price signals generally drive correlated behavior across multiple market participants. Load customers could have service interrupted if multiple BAs, following market price signals, all decided to inaccurately schedule their expected hourly average generation in the same direction in the same hour, without sufficient prospective ability to restore and sustain “balance” within the BAA, if needed. Transmission customers are likely to be frequently interrupted due to unscheduled flows, if one or more BAs take advantage of the BAAL limit and deliberately rely on inadvertent energy to meet their expected BAA imbalances, as BAA imbalances can undisputedly occur without knowledge or regard to transmission availability or coordination. In order 890, FERC made it clear that it was inappropriate for generators within a BAA to “dump power on the system or lean on other generation...The tiered imbalance penalties adopted in the Final Rule generally provide a sufficient incentive not to engage in such behavior”. The Commission unambiguously wanted to encourage accurate scheduling of a generator’s output within a BAA. Though at the time of the 890 ruling the Commission chose not to impose similar rules preventing BAs themselves and their affiliate generators from leaning on the grid, they recognized that there was a potential for such behavior, and noted that it could take action under FPA section 215 if such deliberate inadvertent flows were degrading reliability or harming other customers. These issues have brought to the forefront the importance of the public release of BAA-specific hourly inadvertent flow data. The inadvertent flows resulting from the operations of one BAA can have a significant impact on its neighboring BAAs and the transmission customers on the grid. Powerex feels it public release of the hourly inadvertent flow data would give all entities a better understanding of the way the BAAs are operating in their region and facilitate coordinated operations to ensure the adverse impacts of inadvertent flows can be appropriately minimized. The broader wholesale electricity grid may be a valuable balancing resource for both reducing the wear and tear on dispatchable generation resources. However, it is imperative to reliability, open access transmission principles, and proper functioning wholesale energy markets, that increased utilization of the electricity grid’s inherent transmission flexibility and inherent frequency flexibility be achieved within an appropriate framework. More specifically, before implementing the BAAL limits in BAL-001 and allowing BAs to use the broader electricity grid deliberately as a balancing resource, by either reducing the amount of balancing reserves dispatched, and/or potentially reducing the amount of balancing reserves carried, the following may be required:

1. Enforceable rules and processes that ensure that BAA imbalances can be immediately limited if applicable transmission flowgate limits are reached. Unscheduled energy flows resulting from BAA imbalances should clearly have the lowest priority access to transmission, behind all customers who have invested, and appropriately scheduled, to use the transmission network.
2. Minimum BA balancing reserve requirements, set prospectively, to ensure that the amount of balancing reserves carried on the broader grid are sufficient to maintain grid reliability. Reliance on performance standards, as a lagging indicator, may be insufficient to ensure reliability on a prospective basis, particularly as such performance standards become more liberal such as with the proposed BAAL limits. In Order 693, FERC noted that while the control performance standard metric like Requirement 2, is useful in identifying trends relating to poor regulating practices, specification of minimum reserve requirements to be maintained at all times would complement the control performance standard metrics by providing real-time requirements necessary for proper control. FERC directed the ERO to develop a process to calculate the minimum regulating reserve for a BA, taking into account expected

load and generation variation and transactions being ramped into or out of the BA. 3. The benefits of utilizing the flexibility in the grid are appropriately allocated to all grid participants, through either BAA consolidation or BAA coordination frameworks, and FERC cost allocation oversight. Individual BAAs should not be able to lean on the grid disproportionately, hoping that there are sufficient BAs with a more conservative approach to Good Utility Practice to maintain the grid's reliability, at their customers' inequitable expense. 4. Hourly BAA imbalance data is made public (after-the-fact, in a similar manner to the way scheduled transmission usage is released on OASIS), so that NERC, the Regional Entities, BAs, impacted transmission customers, etc, can use the data to monitor the inappropriate use of unscheduled flow. Unless BAL-001 (or the framework made up by the BARC standards) includes requirements for performance in a manner that prevents an entity from deliberately leaning on the grid to gain commercial advantage, it would be inappropriate to adopt the standard in its present form.

Individual

Michael Falvo

Independent Electricity System Operator

Yes

Yes

While we agree with these four entities comprise the four major Interconnections, the term is used scores of times in other standards. It is beyond the scope of this drafting team to redefine expectations of other standards.

Yes

Yes

Yes

Yes

Yes

Yes

No

While it is not material to the new standard, the A1 criterion is not properly stated. Under A1, ACE needed to cross zero at least once in every ten minute period of the hour and that the total non-crossings had to be less than 10 percent of all periods.

Sections 4.1.1 and 4.1.2 are unclear as to which entities are subject to complying with the standard. Further, the word "calculates" in both Sections turn these Sections into requirements rather than specifying the entities being responsible for meeting Requirements R1 and R2. Inferring from Section 4.1.3, we interpret these Sections to mean that the "Balancing Authority that provides Overlap Regulation Service to another Balancing Authority". In that case, a requirement to hold the service providing BAs responsible for calculating its CPS1 performance after combining its Reporting ACE and Frequency Bias Settings with the Reporting ACE, and Frequency Bias Settings of the Balancing Authority receiving the Regulation Service, would be necessary. Same applies to the BAAL calculation implied in Section 4.1.3.

Group

Associated Electric Cooperative Inc, JRO00088

David Dockery

Yes

Reporting ACE definition: Replace: "the difference between the Balancing Authority's actual

interchange and its scheduled interchange plus its frequency bias obligation plus any unknown meter error" With: "control-error consideration of: interchange, frequency, and interchange-metering errors." Rationale: This simplified description may explain more without restating the equation.

Yes

No

AECI agrees with the posted for ballot Project_2010-14-1_BAL-001-1_Standard_Clean_20120604_final_rev1 copy, where "in support of interconnection frequency." is deleted.

Yes

AECI agrees with this existing and unmodified requirement.

No

AECI is fine with the wording under R2, but not strongly recommends that Attachment 2 be changed as follows: Replace: "60 Hz" or "60" With: "Fs" And reinstate: the earlier Fs definition Rationale: 1) As currently drafted, this standard penalizes BAs who are complying with directed time-error corrections, 2) This draft was only appropriate when our industry believed that time-error corrections would be retired, and 3) any concern, about time-error corrections being so large that they risk UFL first-tier margins, should be addressed by exercising smaller magnitude corrections for longer periods of time.

No

AECI concurs with the concerns expressed by SERC on behalf of smaller BAs.

Yes

Yes

Yes

No

AECI agrees with SERC comment that Attachment 1 Interconnection names should agree with those in the draft Interconnection definition.

Group

ACES Power Marketing Standards Collaborators

Jason Marshall

No

We question the need for the Reporting ACE definition. There is no explanation anywhere in the documentation for its need. Why is the definition of ACE not satisfactory? The definition is not even consistent with the definition of ACE. The definition of ACE uses net actual interchange and net schedule interchange. While we are sure that the Reporting ACE definition intends for these values to be net values, questions will arise why the word "net" is included in one definition and not the other in a compliance driven world. If the definition remains, we suggest striking everything after Area Control Error. Everything after this is already included in the definition of ACE to which this definition refers. The only difference between the two definitions appears to be that one is "instantaneous" and the other is a "scan rate". We think "scan rate" is nearly instantaneous and satisfies the definition particularly since it is the only way to measure ACE and considering there are other requirements (BAL-005-0.1b R8) that specify ACE only has to be calculated (which requires scanning of tie-line measurements) once every six seconds. The bottom line is that the definition does not offer additional clarity. Furthermore, we recommend that the ACE definition should be modified to include the ACE calculation from the standard. The equation really should be the definition as it is much more descriptive than the words provided in the definition.

Yes

No

We think the purpose statement should be modified to state that it is steady-state frequency that is

being controlled. Otherwise, transient frequencies are included which is problematic considering even stable swings in frequency could easily exceed the frequency bounds established in the standard.

Yes

We thank the drafting team for making it perfectly clear that only the rolling 12 month CPS1 calculation is subject to compliance and not the one month calculation.

Yes

Conceptually, we are in complete agreement with the BAAL limit. It is far superior to the CPS2 requirements. The BAAL limits consider frequency impact whereas CPS2 does not. At times, CPS2 forces a BA to move its ACE in a direction that does not support frequency. Furthermore, control for CPS2 could be turned off for 10% of the time (over a month) and a BA could still be compliant. While we agree with the requirement, some further clarification is required regarding the exclusion of one-minute samples as explained in Attachment 2. Since a violation is based on consecutive clock minutes, what should the responsible entity assume about clock-minute samples that are excluded because less than 50% of the data is available per Attachment 2? If responsible entity is exceeding a BAAL high limit for 10 minutes, then fails to record the next 8 clock-minute samples because of data unavailability, and then exceeds the same BAAL high limit for the following 13 minutes, is this a violation?

Yes

Yes

Yes

Yes

The implementation plan states that six months are required to make software changes to an EMS to accommodate the change to the standard. Is this based on the actual experience of those participating in the field trial? If not, the drafting team should reach out to the field trial participants to find out how long it took them to implement the changes. If it is, the documentation should state this clearly. In the first paragraph in the background and rationale section on page 4 of the background document, "Compliance Performance Standard" should be "Control Performance Standard". We think the new variation on the meter error term in the ACE equation is actually more confusing than the previous meter error term. The previous term was clear that hourly integration of the instantaneous meter values was being compared to the revenue quality meters. The new term does not state this as clearly. ACE needs to be capitalized in the second paragraph of the Data Retention section. To the extent that a responsible entity is subject to periodic reporting that will demonstrate compliance, we question the need for a data retention period of one full year. No more than three months of BAAL data should be required We disagree with requiring data to be retained for up to four years. First, the current standard only required the BA to retain the data for one year. No justification has been provided for raising the bar. Second, NERC receives periodic reports for CPS1 and currently for the BAAL limits. Thus, they can retain these reports if they need them. One year is sufficient time for NERC to raise any issues or questions about the input data used in the calculation for CPS1 and the BAAL limits. If no issues have arisen to cause NERC to request data retention for a longer period within the first year, then the responsible entity should not be required to retain it. Third, retention of data beyond the three year BA audit cycle is not consistent with NERC Rules of Procedure. Section 3.1.4.2 of Appendix 4C – Compliance Monitoring and Enforcement Program states that the compliance audit will cover the period from the day after the last compliance audit to the end date of the current compliance audit. The minimum resolution for actual frequency in Attachment 2 should be removed. First, it is essentially a requirement and requirements cannot be written into attachments. Second, it raises the bar over the frequency measurement accuracy established in BAL-005-0.1b R17 without justification.

Individual

Joe Tarantino

drafting team pointed out that CPS2 "... allows significant hours when a Balancing Authority's ACE values are unbounded." Because R2 of the proposed standard will allow BAs to cyclically operate outside the BAAL limit as described above, the problem of BA's operating with an unbounded ACE could actually become worse under the proposed standard, not better. Powerex notes that no technical justification has been put forward as to why a BAA should be able to operate outside the BAAL limit for 30 minutes. We recommend that the drafting team consider a shorter period (e.g. 5 minutes). As well, to prevent the sawtooth behavior, Powerex recommends that a monthly maximum be set on the number of times a BAA can exceed the BAAL limit (e.g. 5 times per month). Another concern is that the requirement will allow unlimited unscheduled flow, across interties when the actual system frequency is close to the scheduled frequency. There seems to be a disregard for the fact that unscheduled flows can have a significant detrimental impact on scheduled flows. Curtailments to scheduled flows is one of the main tools used to keep the system operating within limits during period of high unscheduled flows, effectively giving unscheduled flows priority access over the rights paid for by OATT customers (scheduled flows). For example, during the RBC trial in the West, the number of curtailments to e-tags went up dramatically as a result of unscheduled flows across path 36, as reported by the WECC Performance Workgroup in the December 2011 Quarterly Report on the RBC Field Trial. Most recently, we have seen a record number of curtailments across path 66. In 2011 there were a total of 61 Unscheduled Flow Mitigation events for Path 66 of Step 4 or higher (see the WECC USF Mitigation Procedure). So far in 2012 there have already been 741 events of step 4 or higher. It is a serious concern that the increase in unscheduled flow across path 66 can be attributed to the the RBC field trial (i.e. the BAAL limit). If the proposed standard is approved it should be expected that this issue will continue, and perhaps spread to other parts of the grid. (We discuss this issue in more detail in our response to Question 11.) Also of concern is the dramatic impact that the proposed BAAL limit will have on the frequency error of the Interconnections. In WECC specifically, it has been shown that the frequency error has been steadily increasing since the start of the RBC field trial. As the drafting team has pointed out in the Background Document for this proposed standard, reliability is reduced when Interconnection frequency is moved farther from the scheduled value. In light of the fact that replacing CPS2 with the proposed BAAL limit has already been shown to have the effect of moving the frequency away from the scheduled frequency value, the adoption of proposed standard would have the overall effect of reducing reliability. We would also like to note that, under the WECC field trial, BAs that are operating with BAAL have been requested by the Reliability Coordinator to further limit their ACE due to transmission overload issues in the Interconnection caused by the operations of another BA (e.g. BA #1 is interconnected with BA#2, and BA#1's inadvertent flows cause an SOL violation at the interconnection between BA#2 and BA#3, so the RC requests BA#2 to change their operation). This should be a serious concern: A BA operating in compliance with the proposed BAL-001 reliability standard (during the RBC field trial) is causing or contributing to a violation of another reliability standard (TOP) and potentially causing another entity to be in violation.

No

No comment at this time.

No

No. As stated above in our response to Question 5, because of the significant deficiencies of Requirement 2, a BA would be able to operate in a way that could have a significant impact on reliability, for the majority of the time, without facing any penalty or sanction.

No

No. As stated above in our response to Question 5, because of the significant deficiencies of Requirement 2, a BA would be able to operate in a way that could have a significant impact on reliability, for the majority of the time, without facing any penalty or sanction.

No

No. Powerex feels the Background Document does not reference or explain any of the findings of the RBC trial discussed in Question 5 that should be of concern, i.e. BAs operating outside the BAAL limit in a cyclical manner, the detrimental impact of unscheduled flows on the grid, and the increase in frequency error.

In Order No. 890, the Federal Energy Regulatory Commission (FERC or the Commission) recognized the potential for unscheduled energy flows between adjacent BAAs both to jeopardize reliability and to cause undue harm to customers on the grid. The Commission stated, at P 703, in regards to the

existing framework for inadvertent energy: "However, if there is evidence that it is no longer sufficient to maintain reliability, or is allowing certain entities to lean on the grid to the detriment of other entities, the Commission has authority under FPA section 215 to direct the ERO to develop a new or modified standard to address the matter." Powerex believes that the development of the BAL-001 standard based on the current purpose statement will allow entities to create deliberate inadvertent flows within the standards boundaries, without regard to the impact to transmission customers on the grid. This may result in substantial curtailments to transmission customers in direct contravention of the Commission's open access transmission principles of Order 890. BAL-001 may also be in conflict with FERC Order 693 (P 397). In that order, the Commission noted that while the control performance standard metric (BAAL limit in R2) is useful in identifying trends relating to poor regulating practices, specification of minimum reserve requirements to be maintained at all times would complement the control performance standard metrics by providing real-time requirements necessary for proper control. "[T]he control performance standard metric is a lagging indicator and, as such, does not provide a good indication that necessary amounts of regulating reserve are being carried at all times." The capability to be able to meet a BA's expected intra-hour imbalances, with a significant degree of confidence, should be achieved prospectively each hour. It is not sufficient to reduce a BA's regulation to a level designed only to meet the performance standards retrospectively. Though a prospective balancing reserve requirement as contemplated in Order 693 may be missing from standards currently in place, the inherent limits in the current CPS2 are strict enough such that the need for a prospective minimum requirement is reduced. However, the relaxation of the control performance measures in BAL-001 make it imperative that the minimum reserve requirements contemplated in Order 693 are included.

The recent increase in intermittent resources, such as wind and solar generation, has increased balancing challenges due to variability in generation, driving actual generation to differ from scheduled generation. By eliminating CPS2 and replacing it with the relaxed BAAL limit, the proposed performance standard does not address the potential for a single BA to lean on the grid with deliberate unscheduled energy flows or inadvertent energy, taking any accumulated benefits for itself and possibly even jeopardizing reliability and/or harming other entities on the grid. The detrimental impacts of deliberate inadvertent flows to load customers and transmission customers on the grid could be substantial. Price signals generally drive correlated behavior across multiple market participants. Load customers could have service interrupted if multiple BAs, following market price signals, all decided to inaccurately schedule their expected hourly average generation in the same direction in the same hour, without sufficient prospective ability to restore and sustain "balance" within the BAA, if needed. Transmission customers are likely to be frequently interrupted due to unscheduled flows, if one or more BAs take advantage of the BAAL limit and deliberately rely on inadvertent energy to meet their expected BAA imbalances, as BAA imbalances can undisputedly occur without knowledge or regard to transmission availability or coordination. In order 890, FERC made it clear that it was inappropriate for generators within a BAA to "dump power on the system or lean on other generation...The tiered imbalance penalties adopted in the Final Rule generally provide a sufficient incentive not to engage in such behavior". The Commission unambiguously wanted to encourage accurate scheduling of a generator's output within a BAA. Though at the time of the 890 ruling the Commission chose not to impose similar rules preventing BAs themselves and their affiliate generators from leaning on the grid, they recognized that there was a potential for such behavior, and noted that it could take action under FPA section 215 if such deliberate inadvertent flows were degrading reliability or harming other customers. These issues have brought to the forefront the importance of the public release of BAA-specific hourly inadvertent flow data. The inadvertent flows resulting from the operations of one BAA can have a significant impact on its neighboring BAAs and the transmission customers on the grid. Powerex feels it public release of the hourly inadvertent flow data would give all entities a better understanding of the way the BAAs are operating in their region and facilitate coordinated operations to ensure the adverse impacts of inadvertent flows can be appropriately minimized. The broader wholesale electricity grid may be a valuable balancing resource for both reducing the wear and tear on dispatchable generation resources. However, it is imperative to reliability, open access transmission principles, and proper functioning wholesale energy markets, that increased utilization of the electricity grid's inherent transmission flexibility and inherent frequency flexibility be achieved within an appropriate framework. More specifically, before implementing the BAAL limits in BAL-001 and allowing BAs to use the broader electricity grid deliberately as a balancing resource, by either reducing the amount of balancing reserves dispatched, and/or potentially reducing the amount of balancing reserves carried, the following may be required:

1. Enforceable rules and processes that ensure that BAA imbalances can be immediately limited if applicable transmission flowgate limits are reached. Unscheduled energy flows resulting from BAA imbalances should clearly have the lowest priority access to transmission, behind all customers who have invested, and appropriately scheduled, to use the transmission network. 2. Minimum BA balancing reserve requirements, set prospectively, to ensure that the amount of balancing reserves carried on the broader grid are sufficient to maintain grid reliability. Reliance on performance standards, as a lagging indicator, may be insufficient to ensure reliability on a prospective basis, particularly as such performance standards become more liberal such as with the proposed BAAL limits. In Order 693, FERC noted that while the control performance standard metric like Requirement 2, is useful in identifying trends relating to poor regulating practices, specification of minimum reserve requirements to be maintained at all times would complement the control performance standard metrics by providing real-time requirements necessary for proper control. FERC directed the ERO to develop a process to calculate the minimum regulating reserve for a BA, taking into account expected load and generation variation and transactions being ramped into or out of the BA. 3. The benefits of utilizing the flexibility in the grid are appropriately allocated to all grid participants, through either BAA consolidation or BAA coordination frameworks, and FERC cost allocation oversight. Individual BAAs should not be able to lean on the grid disproportionately, hoping that there are sufficient BAs with a more conservative approach to Good Utility Practice to maintain the grid's reliability, at their customers' inequitable expense. 4. Hourly BAA imbalance data is made public (after-the-fact, in a similar manner to the way scheduled transmission usage is released on OASIS), so that NERC, the Regional Entities, BAs, impacted transmission customers, etc, can use the data to monitor the inappropriate use of unscheduled flow. Unless BAL-001 (or the framework made up by the BARC standards) includes requirements for performance in a manner that prevents an entity from deliberately leaning on the grid to gain commercial advantage, it would be inappropriate to adopt the standard in its present form.

Individual

Anthony Jablonski

ReliabilityFirst

ReliabilityFirst offers the following comment for consideration: 1. Applicability section a. RFC seeks further clarity surrounding the applicability of Balancing Authorities which do not provide Regulating Service. If a Balancing Authority does not provide Regulating Service, are they subsequently not subject to the requirements in the standard? If they are not subject to the requirements in the standard, RFC recommends removing section 4.1.3 since it is not needed as well.

Individual

Jeff Harrison

AECI

Yes

Yes

No

Delete "in support of interconnection frequency".

Yes

No
AECI would like to request a modification to Attachment 2, such that the this calculation uses the scheduled frequency and not a constant of 60.0. Such that the BAAL calculation will adjust for time error correct.
No
VRFs should be adjusted based upon the balancing authorities impact upon the interconnection.
Yes
Yes
Yes
Individual
Greg Travis
Idaho Power Company
Yes
Although WECC is pursuing a Regional Variation to include the WECC ATEC term into the reporting ACE which is needed.
Yes
Yes
Yes
Yes
Yes
Yes
Yes
None.
None
Individual
Michael Goggin
American Wind Energy Association
Yes
Yes
Yes
Yes

Yes
Yes
Yes
Yes
Yes
Based on the experience of the pilot program, this proposed standard will likely allow grid operators to maintain reliability while reducing the need for regulation reserves needed to accommodate all sources of variability on the power system. As a result, the proposed standard should be supported.
Group
Progress Energy
Jim Eckelkamp
Yes
Yes
No
It is not clear that this Standard aids in the control of frequency within defined limits, particularly for transient frequency deviations to avoid UFLS operation. Conclusive results of the BAAL field trial are not provided in the background document. If the industry is to make the move to make this change, there should be evidence provided that this action will aid in better frequency control for the Interconnections.
No
Conclusive results of the BAAL field trial are not provided in the background document. If the industry is to make the move to make the change from CPS2 to BAALs, there should be evidence provided that this action will aid in better frequency control for the Interconnections.
Absent CPS2 L10 limits, at any given time one BA has no incentive to manage its ACE and can take advantage of the regulating power of neighboring BAs who may be balancing more effectively. CPS1 remains in place, however, this is a rolling one-year average and does not provide the same incentive as CPS2. BAL-001-1 Attachment 1 proposes to define actual frequency as "FA (Actual Frequency) is the measured frequency in Hz, with minimum resolution of +/- 0.005 Hz." This proposal includes an unreasonable resolution for frequency measurements and is unnecessary. Accuracy of frequency devices that are used in the calculation of ACE is already required by Standard BAL-005-1 Requirement 17. Further, providing this proposed required resolution on some existing industry equipment would either not be possible or would cause the total bandwidth for which the frequency can be monitored to be reduced to a level that would be unfavorable. The basis or rationale for this proposed resolution is not discussed in the background document and, and this requirement should be deleted from the Standard
Individual

Thad Ness
American Electric Power
No
The definition for the term Balancing Authority ACE Limit (BAAL) implies there is always a reliability risk for exceeding the limit, without taking into consideration relative operating conditions at the time. Merely exceeding an ACE Limit (BAAL) does not always constitute that there is an inherent reliability risk, as that would depend on the actual operating conditions and timing of the occurrence and/or normal frequency characteristics on that operating day. For example: High Frequency prior to an extreme morning load pickup with Net Scheduled Interchange out, and Low Frequency prior to nightly fall off are sometimes a more favorable reliability condition. We recommend changing the text to read "The limit beyond which a Balancing Authority contributes more than its share of Interconnection frequency control's allotted reliability deviation for required measure". We agree with the definition of the term Reporting ACE, however, it should be noted that Balancing Authorities with membership to some Regional Power Pools use an added factor of ACE diversity component in their Reporting ACE beyond what is mentioned.
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes
There needs to be an understanding and appreciation of the increasing number of newly-registered market participant Generator Operators that are not from the traditional, vertically integrated utility environment, and their impact on a Balancing Authority's ability to balance. We encourage the SDT to think of opportunities to develop appropriate requirements in order to ensure that Generator Operators can help support the objectives of balancing load and generation in a reliable manner. The background information on balancing sometimes refers back to the former "NERC Policy", at a time when the preceding "Control Area" model applicability had different operating characteristics than today's more granular functional model entity in terms of Balancing Authority, Generator Operator, Load Serving Entity (Demand Side Load Management), Market Operator, etc. The stated compliance applicability within the proposed Standard fails to address inherent impact of these other functional entities and variables on a Balancing Authority's sole ability to comply with these requirements in today's actual practice. Balancing Authorities that are part of regional energy and/or ancillary service markets may have unique challenges with respect to deployment of Balancing Authority resources. For example, the failure of following market deployment may only involve a financial market charge, however the results could have significant impact on Balancing Authority obligations.
Individual
Chris Mattson
Tacoma Power
Yes

While it is not material to the new standard, the A1 criterion is not properly stated. Under A1, ACE needed to cross zero at least once in every ten minute period of the hour and that the total non-crossings had to be less than 10 percent of all periods.

General Comments and Observations • The drafting team changed the NERC definition of Interconnections. This term is used in many standards and may have impact on them. • The reporting ACE term that the team created seems unnecessary as ACE is already defined. It also expands on the expectations of ACE. The frequency resolution appears too tight 0.0005Hz (compared to 0.001 in BAL-005) and the new term, Net Metering Error is prescriptive on how metering error is corrected.

Group

Northeast Power Coordinating Council

Guy Zito

No

As with BAL-013-1, should "clock-minutes" be replaced with "minutes"?

Because the frequency model is simply using 3 times Epsilon 1 for trigger limits, it does not produce optimum results. The 3 times Epsilon 1 trigger limits are not calibrated to account for relay settings or frequency response. The 3 times Epsilon 1 approach has a "set it and forget it" characteristic. The alternative model would require periodic updating as relay limit settings change, the Interconnection's frequency response changes, and the perceptions of the level of protection needed change. It also does not target a specified level of reliability. Concerns about transmission limits caused by dropping CPS 2 and the limitations in CPS 1 still haven't been addressed. For CPS 1 data submissions, the number of one minute samples in the month becomes a new requirement. In Attachment 2 more complete guidance is needed for the treatment of a missing one minute sample when counting the time expired during a BAAL limit violation. Which of the following assumptions should be made about the missing sample: compliance, non-compliance, same state as the previous sample, same state as the next sample, or simple omission?

Group

Arizona Public Service Company

Janet Smith, Regulatory Affairs Supervisor

Yes

Yes

Yes

Yes

No

AZPS has not been convinced that the RBC is a better form of control then what is currently in place. Yes on VRFs Since the RBC Field Trial began the WECC average frequency deviation has been increasing. The RBC Field Trial results are not an accurate reliability assessment as not all participating Balancing Area's Energy Management Systems have CPS1-only control capability and, thus, are not fully participating. CPS2 is designed to limit a Balancing Area's unscheduled power flows

and does not have a frequency component – that is what CPS1 is designed to measure. The new BAAL standard will allow far more unscheduled power flows when the Interconnection frequency remains near nominal, which it predominately does. CPS2 allows a Balancing Area to be non-compliant for 72 hours (10%) each month. Under the proposed BAAL standard, a Balancing Area can be non-compliant twenty-nine minutes of each 30 minute period which is 696 hours (96%) per month. This will be taken advantage of to the detriment of reliability.

Yes

Yes

No

While "reliability issues" have not been identified by the RCs, there are other issues that need to be addressed that are not mentioned in the background document.

Yes

Yes, provides clarity but there remains disagreement with the rationale.

None noted

No comments

Individual

John Tolo

Tucson Electric Power

No

There should be an equation or formula included with the definition

Yes

Somewhat vague definition. It's more identifying the interconnections.

No

This purpose statement does not match the purpose statement in the proposed Standard.

No

There appears to be no change in CPS1 calculations or requirements so the current BAL-001-0.1a is preferred.

No

While I agree with the theory of BAAL, and the 30 minute limit, the BAAL calculation needs to address the fact that the BAAL for small BAs can be more restrictive than the current CPS2.

Yes

No

Need to address the BAAL calculation for small BAs

Yes

No

While I agree overall with the background document, there have been some transmission flow issues reported from the Western Interconnection RCs. To make a statement that there have been no reported reliability issues may not be entirely correct. I agree that BAAL has a more positive effect on interconnection frequency than does CPS2. BAAL with some sort of transmission limit might be the way to go.

no

Please note and read the WECC PWG report on RBC. Thanks to the drafting team for their efforts.

Individual

Kathleen Goodman

ISO New England Inc

No

Please see additional comments provided.
Yes
Yes
No
We believe that the frequency model and its use of 3*Epsilon for frequency trigger limits has significant shortcomings. The level of reliability targeted and achieved is a function of underfrequency relay settings, interconnection frequency response, and the size and expected outage rate of the design contingency(s) for which protection is needed. 3*Epsilon is not sensitive to these values or changes in them over time. It is not coordinated with the model in the Frequency Response Standard under development, which does address these sensitivities. We are concerned that CPS 1 alone will not address adequately the time of day short term frequency excursions observed on the Eastern Interconnection. Additionally, we continue to have reliability concerns with the BAAL limits not accounting for large ACE excursions and the possibility for an increase in transmission limit exceedences associated with such operation. We believe the Interconnection will be further exposed due to the lack of ACE bounding to somehow reflect transmission limits, and continue to believe that CPS 2 is a more reliable metric.
No
We believe that the frequency model and its use of 3*Epsilon for frequency trigger limits has significant shortcomings. The level of reliability targeted and achieved is a function of underfrequency relay settings, interconnection frequency response, and the size and expected outage rate of the design contingency(s) for which protection is needed. 3*Epsilon is not sensitive to these values or changes in them over time. It is not coordinated with the model in the Frequency Response Standard under development, which does address these sensitivities. We are concerned that CPS 1 alone will not address adequately the time of day short term frequency excursions observed on the Eastern Interconnection. Additionally, we continue to have reliability concerns with the BAAL limits not accounting for large ACE excursions and the possibility for an increase in transmission limit exceedences associated with such operation. We believe the Interconnection will be further exposed due to the lack of ACE bounding to somehow reflect transmission limits, and continue to believe that CPS 2 is a more reliable metric.
No
Given the rampant need in the industry for Requests for Interpretations, Rapid Revisions, and CANs, we believe that future Standards need to be written so that they can "stand alone" upon scrutiny.
Group
SERC OC Standards Review Group
Stuart Goza
Yes
Yes
No
Delete "in support of interconnection frequency".
Yes
This is an existing requirement and was not modified by the standard drafting team.
Yes
The SERC OC Standards Review Group is concerned that the reliability impact of violating this

requirement is proportional to the size of the balancing authority. For example, PJM, at a size of over 100,000 MW has a much more impact on reliability than SEPA, at less than 2000 MW. We do not understand how to apply VRFs consistently. This may require splitting into multiple VRFs considering the size of the BA.

No

See comments to No. 5 above.

Yes

Yes

Perhaps VSLs could be graded by the size of the entity in lieu of having multiple VRFs.

Yes

No.

Should the standard include reporting requirements to the RRO? On Attachment 1, the Interconnection names need to be revised to agree with the Interconnection as stated earlier in question 2.

Group

Southern Company

Antonio Grayson

Yes

Yes

Yes

Yes

Yes

Yes

Yes

Yes

Yes

Group

Western Electricity Coordinating Council

Steve Rueckert

No

BAAL 1. It is not clear what the phrase "interconnection frequency control reliability risk "means. 2. BAAL should be defined by the formula used just like ACE is defined by components used to calculate ACE Reporting ACE 1. If the existing definition of ACE in the NERC Glossary is retired, then the proposed definition will be using the undefined term ACE which in the proposed standard is not defined. The definition cannot refer to an undefined term. If the existing definition is not retired the proposed new term and the existing term appear to be the same thing, and the new term would not be necessary. 2. The proposed standard uses a new definition Reporting ACE which is a replacement

of the current definition ACE in the BAL-001 standard. While the ACE formula has been renamed as Reporting ACE, all references to ACE in Attachment 1 of BAL-001 and in other NERC Standards have not been changed. The term ACE is used in BAL-002, BAL-003, BAL-004-WECC-1, BAL-005 and IRO standards. 3. The WECC Board of Directors recently approved a WECC Regional Variance to NERC BAL-001-0.1a that would include the Automatic Time Error Correction term in the ACE definition in the Western Interconnection. WECC is in the process of submitting this regional variance to NERC for NERC BOT consideration. If approved, the reporting ACE will be different for WECC. The drafting team needs to be aware of this and take this into account. 4. WECC recommends that all of these issues can be resolved if the new term Reporting ACE is eliminated and the current ACE term is retained.

No

Texas should be replaced with ERCOT. A small portion of the state of Texas resides in the Western Interconnection. The use of the word Texas may be confusing because of this.

No

1. The phrase "to support interconnection frequency" does not add anything to the requirement and should be deleted. If a BA barely missed in one month but was compliant for the 12-month period, would that BA fail to support interconnection frequency? 2. In Attachment 1 the definitions for Net Interchange Actual and Net Interchange Schedule have been changed but they are not included in the definition section of the standard. The SDT needs to clarify if these new definitions will replace the existing approved definitions in the glossary 3. In attachment 1 the term NME in the ACE equation replaces the existing term IME. The definition itself has not changed significantly but just the acronym. WECC has Regional Standard BAL-004-WECC-1 that refers to the term IME and recommends that the SDT retain the existing term and definition of IME. 4. The attachment 1 defines Reporting ACE and essentially removing the definition for the term "ACE" but the formulas in attachment 1 still refer to ACE. WECC recommends replacing the proposed Reporting ACE with ACE which also addresses the inconsistency with all other NERC standards that refer to the term ACE. 5. It is not clear why the calculation for CPS1 was moved from the standard to the attachment. Are attachments part of the standard and if so must they go through the standards development procedure if a modification of the equation is made? Will the industry be given a chance to comment/ballot on any changes made to the formulas if they are not part of the standard. What process will be used to change content in the attachment 1 and will the industry have opportunities to comment and ballot on the changes?

No

1. The phrase "to support interconnection frequency" does not add anything to the requirement and should be deleted. 2. It is not clear why the calculations for BAAL are included in attachment 2. Are attachments part of the standard and if so must they go through the standards development procedure if a modification of the equation is made? Will the industry be given a chance to comment/ballot on any changes made to the formulas if they are not part of the standard. What process will be used to change content in the attachment 1 and will the industry have opportunities to comment and ballot on the changes?

Yes

Yes

To the extent that we believe the VSLs are appropriate for the requirements as written. However, the VSLs will potentially need to be modified if the suggested changes are implemented.

No

The background document should include the Field Trial results from all Interconnections.

1. The BAAL formula and the calculated limits are more restrictive than current standards (CPS2 and L10) for Balancing Authority with small frequency bias settings. The smallest frequency bias setting in WECC is -2 MW/0.1 Hz. The limitation of BAAL to BA of this size is substantially high. For example at 59.98 the BAALlow is calculated to be -4.62 MW compared to L10 limit which is -7.66. Under the RBC Field Trial the frequency errors and manual time error corrections have increased (WECC Report).

Hence the frequency deviates from 60 Hz more often than in the past and the smaller BAs have to excise more control to stay within their BAAL. The SDT needs to address the disparate treatment of small BAs under the proposed BAAL requirement in the standard. The Priority-based Control engineering report (PCE Report) from 2005 directed by NERC stated this issue. The report says that the proposed BAAL may require disproportionately more control from smaller BAs than larger BAs. Also in Table 7 under item 7 it is stated "PCE has verified that the proposed BAAL formulation ensures that if all BAs are within their BAAL at all times, the Interconnection frequency will not exceed FTL. Therefore, for frequency to exceed FTL, at least one BA must be outside its BAAL. However, these features are not unique to the selected BAAL formulation; many different sets of formulations would have the same properties. Additional research is necessary to determine the optimum BAAL formulation. If scheduled frequency is replaced with 60 Hz in the proposed BAAL formulation, the properties described above will no longer hold during periods of time error correction." WECC recommends the SDT consider developing a formula that distributes the control burden fairly among BAs. 2. WECC has the following concerns with proposed BAAL requirement's impact on transmission path loading as a result of large ACE values: a) During the field trial in WECC, an increase in Unscheduled Flow was noticed on Qualified Paths 36 and 66. In particular, during maintenance when the limit is significantly reduced high ACE values exacerbate path loading. b) The RBC field trial in the WECC was implemented in 3 distinct phases to test the impact on transmission path loading. Initially the BAAL was limited to no more than 2 times L10, in phase 2 the BAAL was limited to 4 times L10; and in phase 3 there was no cap on BAAL at 60 Hz. During Phase 3, the Reliability Coordinators (RC) reported several SOL exceedance associated with high ACE. The SOL exceedances were mitigated when RCs requested the high ACE value to be reduced to L10. The SDT must address transmission loading issues caused by high ACE.

Individual

Jay Campbell

NV Energy

No

I agree with the BAAL definition. The Reporting ACE definition is too wordy, ambiguous and confusing. To say "Scan rate values of...ACE" seems redundant. To say "measured in MW defined in BAL-001"--- does one really need to define MW? Additionally, I don't see the definition. The ACE definition seems at odds with the equation on page #7. I suggest: "Balancing Authority's Area Control Error (ACE) is the difference between the Balancing Authority's actual interchange and its scheduled interchange plus its frequency bias multiplied by the difference between actual and scheduled frequency plus any known meter error".

Yes

No

My suggestion: "To control Interconnection frequency within defined limits."

Yes

Yes

While I generatilly agree with the intent or R2, it's too wordy. I suggest "Each Balancing Authority shall operate such that its clock-minute average Reporting ACE does not exceed, for more than 30 consecutive clock-minutes, its clock-minute BAAL [BAAL is a defined term] for the applicable Interconnection in which it operates. The BAAL equations are detailed in Attachment 2."

No

For R1, a VRF of medium seems excessive. A value, measured over a year, cannot "directly affect the electrical state or the capability of the Bulk Electric System".

Yes

Yes

Yes

I am not aware of conflicts.
No.
Group
Bonneville Power Administration
Chris Higgins
No
BPA believes that the definition is subjective and only the formula should be used for the definition.
No
BPA understands that this is an update to the existing definition, but it is not a definition. This is simply identifying the interconnections.
No
The purpose statement referenced above does not match the standard. The standard states: "To control Interconnection frequency within defined limits". It does not include "in support of interconnection frequency". Please clarify which one is correct.
No
BPA favors the previous version of the requirement. Referring to the attachment creates many requirements within one identified requirement without breaking them out. BPA believes there should be only one requirement within each of the identified requirements.
No
BPA disagrees with the statement in the question which says "enhance the reliability". Referring to the attachment creates many requirements within one identified requirement without breaking the out. BPA believes there should be only one requirement within each of the identified requirements.
Yes
No
BPA does not agree with the requirements in general, and cannot support the measures.
Yes
No
The document mentions that there has been no reliability issues with the field trial. BPA and others in WECC have experienced many SOL violations due to Large ACEs. BPA disagrees with the argument that CPS2 is less reliable because you can be out of bounds for 72 hours per month. Taking the same argument to RBC, one can be out of bounds 29 minutes, back in for a minute and out of bounds for 29 minutes. This equates to 696 hours per month. BPA believes it has been demonstrated, at least in WECC, that CPS2 is more reliable. BPA has yet to determine if the decrease in reliability is worth the increase in flexibility that RBC allows.
The sub-requirements of 4.1 of the applicability section contain instructions. BPA suggests that only 4.1 and 4.1.3 (a new 4.2 created) be used instead and the rest eliminated and added as a requirement. Please refer to the WECC Reliability-based Control Field Trial Final Report July 2012 Performance Work Group Draft document. • Frequency Error • Manual Time Error Corrections • Transmission issues • Unscheduled flow events • Small BAs In the field trial, there is direction on when the RC should intervene during frequency deviations below the FTL. BPA believes this should be retained either informally or formally in the standard.
Individual
Don Schmit
NPPD

No
The elimination of CPS2 has a detrimental impact on reliability because the amount of unscheduled interchange a BA can have is not capped when frequency is in the "opposite" direction. This can lead to transmission constraints. TOPs and RCs must have a mechanism to restrict the unscheduled flows on the system due to a BA unilaterally over or under generating. I believe the old policies stated this as the intent of CPS 2 (at least it was for A2). The standard is defective as written.
Group
SPP Standards Review Group
Robert Rhodes
Yes
Yes
Yes
Yes
No
We are concerned about not being able to meet the BAAL criteria during certain contingency events exempted in BAL-002-2. For example, in the existing BAL-001-0.1a, CPS2 is a monthly average value whereby not totally covering a multiple contingency event could be exonerated at the end of the month provided control for the remainder of the month was sufficient to bring the monthly value to at least 90%. With BAAL, we only have a 30-minute window of forgiveness which could create problems, making BAAL a tighter control parameter. We would suggest at least an exemption for BAAL compliance during events whereby multiple contingencies cause the total generation loss to be greater than a BA's or RSG's MSSC.
Yes
Yes
Yes
Yes
The background document provided with BAL-001-1 provided valuable information regarding the history of control performance criteria and how the SDT got to where it is today with the proposed standard. What are the plans for the document? Will it become a guideline, reference document, etc? It needs to be maintained for future reference and updating.
Not aware of any conflicts.
The effective date as proposed in the draft standard is six (6) months following approval by applicable regulatory authorities. This is too short. We would suggest a 12-month window before the approved standard becomes effective. This provides the BA with time to consult with EMS vendors, design and retrofit necessary changes to existing control algorithms and testing – both acceptance testing for the AGC changes and parallel testing alongside existing AGC systems to ensure satisfactory operation. Currently, the BAs that are participating in the BAAL field trial are exempt from CPS2 compliance. During the transition from BAL-001-0.1a to BAL-001-1, there need to be exemptions extended during testing of BAAL control schemes. Currently SPP is working on a project to consolidate BAs within the

region into a single BA. The proposed completion date is scheduled for March 1, 2014. If the standard were to become effective prior to this date, considerable expense and effort would be expended needlessly once the consolidation takes place. Could SPP request a regional variance for exemption from R2 until March 1, 2014?

Individual

Karen Webb

City of Tallahassee

No

The definition for BAAL introduces a new concept of "Interconnection frequency control reliability risk". This appears to be managing risk while the standard provides "cut and dry" limits. Suggest: "The limit beyond which a Balancing Authority contributes more than its share of Interconnection frequency deviation. This definition applies to a high limit (BAALHigh) and a low limit (BAALLow)."

Yes

No

The City of Tallahassee (TAL) is unsure of the clarity of this purpose statement. Suggest: To control individual Balancing Area ACE deviation within defined limits in support of interconnection frequency.

Yes

No

While TAL agrees with the concept of the proposed language, the change in the measurement time from BAL-001-0.1a, which was a monthly measure, to a 30-minute measure is troublesome. Each instance of exceeding 30 minutes would be a violation. This may require changes to unit responses that have not been a problem in the past due to the averaging of unit response over a month period.

No

The proposed M1 and M2 each allow for evidence in hard copy OR electronic format. Section D item 1.2 (Data Retention) seemingly excludes the acceptability of hard copy evidence. TAL suggests that the Data Retention requirement be expanded to include hard copy evidence to be consistent with M1 and M2.

No

Although TAL understands from the document's Introduction that no reliability issues have been identified in the field trial, TAL seeks additional information on the challenges encountered by the participants during the implementation and field trial. TAL also seeks greater explanation of the field trial results.

1. Effective Date: TAL questions whether six months is sufficient time for all EMS vendors to develop changes to software and for all entities to successfully implement the changes within the confines of the CIP standards, which will require multiple layers of testing outside of scheduled updates. TAL suggests 24 months. 2. Data Retention: TAL suggests a clarification to the requirement language that data retention is the longer of either (a) the data retention period defined in the standard or (b) the period since the last audit. As the proposed language reads, the need to retain evidence since the previous audit (if longer than the defined retention period) is addressed in a separate area from the defined retention period. 3. Attachment 2: Are the Epsilon 1 values expected to change?

Individual

RoLynda Shumpert

South Carolina Electric and Gas

Yes

Yes

No
South Carolina Electric and Gas supports the comments submitted by the SERC OC Standards Review Group
Yes
South Carolina Electric and Gas supports the comments submitted by the SERC OC Standards Review Group
Yes
South Carolina Electric and Gas supports the comments submitted by the SERC OC Standards Review Group.
No
Yes
Yes
South Carolina Electric and Gas supports the comments submitted by the SERC OC Standards Review Group
Yes
No
South Carolina Electric and Gas supports the comments submitted by the SERC OC Standards Review Group.
Individual
Don Jones
Texas Reliability Entity
Yes
There is an existing definition for "Control Performance Standard" which may need to be modified or deleted. Additionally, it may be better to end the definition after the phrase "as defined in BAL-001," as using arithmetic terms (difference and plus) may not appear to match the calculation in Attachment 1.
No
Please use "ERCOT" (not "Texas") as the name of the Interconnection, because it does not cover the entire state of Texas. Note that "ERCOT Interconnection" is used in Attachment 1.
No
We suggest a more precise purpose statement as follows: "To control Interconnection frequency within defined limits by balancing real power supply and demand in real-time."
Yes
No
ERCOT currently has a waiver for CPS2 compliance. With this new BAAL requirement, the waiver may no longer be needed, but this needs to be evaluated further. How will this requirement be evaluated when the BA declares an EEA? How will this requirement be evaluated if there is a generation loss event greater than the MSSC?
Yes
There is a reference to BAL-003-1 that appears misplaced in the VRF/VSL justification document (please verify).
Yes
Yes

1. For the applicability section, ERCOT, as the single BA for the entire interconnection, does not provide or receive overlap regulation service from another BA. The SDT should consider adding an additional applicability for this specific situation or re-format the section to clarify applicability to a Balancing Authority not involved in Overlap Regulation Service. 2. Is NME consistent in use of units of measure? (ACE is measure in MWs, but NME is "the meter error correction factor" representing a difference in megawatt-hours). 3. Is there a maximum excluded value for one-minute sample periods that would invalidate a CPS1 or CPS2 calculation (i.e., If 59 minutes of every hour in a month were excluded because 50% of the one-minute period data was invalid, is the CPS1/CPS2 value acceptable)? Perhaps modify the "valid" requirements to be 50% of the time period under consideration or a similar acceptable value for the time period in question (one minute, hour, day, month...).

Individual

Nicholas L. Hall

Constellation Energy Control and Dispatch, LLC

Yes

Yes

Yes

As mentioned in later comments, the specific purpose of R2 seems to be the development of a boundary for ACE deviation, with consideration given to frequency support. Especially given the manner in which R2 attempts to control for frequency, its intent is clearly not the simple support or control of frequency.

Yes

No

While the calculation of ACE performance and its impact on frequency is a positive goal, the BAAL calculation, in its current form, does not accomplish this. Since the BAAL measure is comparing current ACE values against a calculated average frequency value, the BAAL measure inherently allows for BAAL to signal ACE corrections in the opposite direction of current frequency, and can and will penalize Balancing Authorities (through negative BAAL and CPS performance) for real-time ACE values that exceed BAAL limits, even while they are supporting current system frequency. In order to accomplish the intended goals of the requirement – to limit ACE deviations while considering their impact on frequency - , the BAAL measure needs to measure current actual ACE values against current actual frequency values at the scan rate utilized for ACE/CPS calculation. Furthermore, the trigger for when either BAALLOW or BAALHIGH is used for measure is based on actual frequency, setting up a three part disagreement in which frequency measure is used. For example, an Actual Frequency (as in Real Time, not averaged) of 60.1 is used to trigger BAALHIGH, which would then measure performance against the previous minute average frequency, which could be below 60Hz, demonstrating that the measure is not designed to accomplish its specified goals. The purpose statement also seems slightly off base. The intention of BAAL appears to provide a measurable boundary for ACE performance, with Frequency taken into consideration, rather than simply as a mechanism to support system frequency, which seems to be the specific focus of the CPS1 criteria. The purpose statement should more clearly reflect the actual intent of R2, as well as that of R1.

Yes

Yes

Yes

Yes

See comment for item 5, related to R2. If the calculation indicated for R2 is not successful in meeting the intent of the standard, then the measures would be similarly problematic.

The Applicability section of the standard takes an unusual format. 4.1.1 and 4.1.2 seem more appropriate as sub requirements for R1 and R2, respectively, than as applicability statements. If the applicability section includes Balancing Authorities and Balancing Authorities Providing Overlap Regulation Service, then 4.1.1 and 4.1.2 should move to the sub-requirements section.
Group
MISO Standards Collaborators
Marie Knox
No
The creation of a new definition, Reporting ACE, is unnecessary as Area Control Error is already a defined term. Further, the benefit to reliability from the addition of this definition is unclear; indeed, the addition of this definition may actually result in confusion regarding the appropriate measures for reliable performance. Accordingly, there does not appear to be a need for this new definition. Attachment 1 expounds upon the definition of the term Reporting ACE. This description is overly prescriptive, redundant, and more restrictive than the performance obligations provided in complementary Reliability Standards. For example, the use of frequency resolution of 0.0005Hz is more restrictive than is required under BAL-005. Further, the creation of a new term, Net Metering Error, requires utilization of a meter correction factor that is different and more restrictive than the net meter value defined and utilized today (which is an estimate). MISO further notes that the meter error utilized in this standard is referenced and utilized in other BAL standards for which no modifications are currently proposed. MISO cannot support the addition of terms and requirements that may contradict or otherwise confuse Registered Entity obligations under other, impacted Reliability Standards.
No
While MISO agrees that these four entities comprise the four major Interconnections, the term is used scores of times in other standards. It is beyond the scope of this drafting team to redefine expectations of other standards.
No
While MISO agrees with the Purpose provided in the standards, it notes that the phrase defined above is not consistent with the Purpose provided in the version of BAL-001-1 posted for comment.
No
MISO agrees that performance should be evaluated using a 12 month period evaluated on a monthly basis, but requests clarification that substandard performance in one month would not result in many months of off-normal performance. More specifically, because the inclusion of one month of off-normal performance apparently would be carried through multiple monthly calculations, the impact of that one month of off-normal performance would be retained until it "rolls out" of the time frame required for calculation of the average. Accordingly, a Balancing Authority's performance could be impacted for a significantly longer period of time than the time period for which performance was actually impacted. Additionally, MISO notes that the language utilized in R1 indicates only the requirement to utilize a 12-month period, but does not prescribe that the time period be a "rolling twelve month" period as is indicated in the VSL section or as the "most recent consecutive twelve months" as is indicated in Attachment 1. MISO suggests that all language in the standard regarding the twelve month period be standardized to ensure that Registered Entity obligations are clear and unambiguous.
No
The proposed changes in BAL-003 with regard to variable bias (no floor on variable bias) open the opportunity for gaming R2.
Yes
Yes
Yes
No

While they are not material to the new standard, the A1 criteria are not properly stated. Under A1, ACE needed to cross zero at least once in every ten minute period of the hour and the total non-crossings had to be less than 10 percent of all periods.

MISO notes the use of cross-references and similar terms among and between reliability standards. Accordingly, terms and concepts previously utilized in BAL-001-0.1a that have been replaced, modified, or re-defined in BAL-001-1 may impact other reliability standards such as BAL-003, BAL-004, and BAL-005-0.1b. MISO notes that the use of cross-references and similar terms should be evaluated to ensure consistency amongst the reliability standards and requirements. In particular, where terms and requirements have been redefined or modified in BAL-001-1, a cross-referenced or closely related standard or requirement could be impacted by the modification to BAL-001-1. For example, BAL-005-0.1b references the "ACE equation," which equation appears to have been replaced by an equation to calculate Reporting ACE. Additionally, the creation of a new glossary definition could result in ambiguity regarding required performance outcomes and obligations where a previous defined term had been used and is maintained in cross-referenced or closely related standards. For example, several BAL standards refer to and use ACE as a performance standard or requirement. It is unclear whether this performance obligation remains tied to raw ACE calculations or to an entity's Reporting ACE. MISO respectfully suggests that the BARC SDT perform a comprehensive review of BAL-001-1's impact on cross-referenced or closely related reliability standards prior to implementation.

MISO supports this standard generally and, in particular, the concept and use of BAAL in lieu of CPS2.

Individual

Alice Ireland

Xcel Energy

No

The definition of Reporting ACE appears to be overly prescriptive. The WECC has a modified ACE that is working its way through the process to make it clear that the ACE for compliance purposes would become the WECC defined ACE, not the NERC defined ACE. The drafting team needs to take this difference into account and the current draft standard does not account for that modification. The drafting team also should take this opportunity to include in the definition further clarity related to concepts such as ACE Diversity Interchange, Dynamic Schedules, Pseudo-ties and Automatic Time Error Correction.

No

Not all of Texas is in the ERCOT or Texas Interconnection, therefore the proposed change is likely to cause confusion. As an entity that has a Balancing Authority Area operating in part of the state of Texas, we can attest to the fact that there is already enough confusion in the industry related to the difference between electric service in the state of Texas and the Interconnection that operates wholly within the boundaries of Texas.

No

The purpose does not make sense. In order to make it clearer, end the sentence after the word "limits." With this change, it would also be acceptable to add the phrase "during normal operations" after the word "limits".

No

The last phrase "to support interconnection frequency" makes the requirement unclear. Does this language mean that frequency is not allowed to get outside of defined parameters mean that there has been a violation of the standard by an entity within the interconnection? Please delete that phrase so the requirement is clear and concise.

No

The last phrase "to support interconnection frequency" makes the requirement unclear. Please delete that phrase so the requirement is clear and concise. Additionally, the language in the requirement needs to in some way address the issue of clock minute average that are determined to be invalid do to issues with the measurement equipment, especially if the measurement equipment has an issue around the end of a 30 minute exceedance.

No

It is unclear from the language if the required data must be EMS quality or if the data can be from a data recorder such as PI. The Measure needs to be clear on this issue.

No

Xcel Energy recommends that the Background Document refer to and provide a link to the data and related evaluations that has been collected over the years of the field trial.

While not a true conflict, it appears that the design of the BAL-001-1 R2 related to RBC and the BAL-002-2 R1 are not coordinated. The drafting team should review these two requirements and determine if there is reason to modify the BAL-002 requirement to more closely match the desire to operate within a pre-determined range based on frequency under BAL-001-1 R2. Ideally, all four of the standards under the BARC SDT would be combined into a single standard to reduce the likelihood of conflicts between them during the compliance process. While separating them may make it easier to focus on the minute details of one versus the other, there is a large risk that the separation can cause conflicts based on the interpretation of one versus the interpretation of another. As an example of the type of conflict that is possible as currently structured, one could argue that Requirement R2 in BAL-001 supplant Requirement R1 in BAL-002 or is Requirement R1 of BAL-002 the superior requirement.

Individual

Brett Holland

KCP&L

The proposed BAAL measure in replacement of the current CPS2 removes a performance measure that is independent of the rest of the interconnection performance. The current CPS2 is based on interconnection statistical performance and provides an entity with a measure that is an indication of how well an entity is balanced with energy resources to load obligations. The proposed BAAL measure is very close in concept to the measure for the current CPS1 and has a similar effect. As the interconnection frequency moves away from 60 Hz the BAAL boundaries shrink and can shrink to levels that are lower than metering accuracies inherent in control systems and the normal variations of ACE that can occur. The current CPS1 ties an entities control performance to rest of the interconnection as it is a function of actual system frequency. The current CPS2 reflects an entities independent performance for maintaining an acceptable balance of load to energy resources. It is important for an entity to have some measure of its own performance apart from the performance of the interconnection. There may be a reliability need to "tighten" the performance metrics around what constitutes good and acceptable "balance" of load obligations and energy resources, but it is important to maintain a metric that reflects an entities performance apart from the rest of the interconnection.

Individual

Laura Lee

Duke Energy

No

Duke Energy agrees with the Balancing Authority ACE Limit definition. Duke Energy does not support the use of the new term "Reporting ACE" as we are unaware of any issues to date created by the current defined term in the standard. It is understood that the "instantaneous" value of ACE is the current scan, as that is the ACE made available to the operator in real-time. The Reporting ACE

definition adds unnecessary confusion and should therefore not be developed. ACE should be substituted in any instance where "Reporting ACE" is used in these standards. If the drafting team moves forward with its proposal to use "Reporting ACE", Duke Energy believes that the Standards and supporting documentation need to clarify that any reference to "clock-minute ACE" means the clock-minute average of the Reporting ACE.

Yes

Though this definition appears appropriate, if the "Texas" Interconnection includes operation of areas outside of the state of Texas, another name should be considered.

No

The Purpose Statement in the draft differs from what is presented in question 3 and states "To control Interconnection frequency within defined limits". The purpose stated in this question is preferable, with capitalization of the second use of interconnection. Add "in support of Interconnection frequency" to the proposed Purpose Statement. Additionally, the Background document uses the term "predefined limits" which is a more accurate description.

Yes

Yes

See comment to question 1 on the use of Reporting ACE.

Yes

Yes

Yes

Yes

The document provides sufficient clarity as to the development of the standard. There is no value added to the document, however, with the inclusion of the "Historical Significance" section going back to 1973, A1-A2 Control Performance Criteria, then leading up to 1996 describing the NERC Policy CPS1, CPS2, and DCS. The SDT simply needs to define CPS1 and CPS2 and their rationale for the development of the standard. On page 5 of the document, the SDT left out the word "Standard" between Performance and 2 in the first paragraph under the "Background and Rationale" section. "Significant hours" is not a good description for the 72 hours per month a BA's ACE can be outside its L10 as it is used in the last sentence of the document on page 6. It should be changed to something along the lines of, "...allows for a Balancing Authority's ACE value to be unbounded for a specific amount of time during a calendar month."

It could be interpreted that the language in R5 of EOP-002-3 conflicts with the CPS1 and BAAL standards. EOP-002-3 R5 includes the sentences, "The Balancing Authority shall not unilaterally adjust generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes. Such unilateral adjustment may overload transmission facilities." As operation in support of Interconnection frequency under CPS1 and BAAL allows for support beyond that supplied by frequency bias action, Duke Energy believes that the sentences should be taken out of EOP-002-3 R5, which were never intended to be applicable to the deficient Balancing Authority for which the standard applies. Conforming changes will also need to be made to EOP-002-3 R6 which references "Control Performance and Disturbance Control Standards". It could be interpreted from the language in R6 of EOP-002-3, that a Balancing Authority is considered in an emergency condition and should be implementing its emergency plan if it is not capable of complying at any time to the CPS1, CPS2, BAAL, or DCS measures. In a multiple-BA Interconnection, the bounds of CPS1 and BAAL represent each BA's share of responsibility in maintaining frequency within defined bounds - to the extent that Interconnection frequency remains within acceptable limits, non-compliance in a general sense is more of an equity concern, than a reliability issue rising to the level requiring actions up to an including the shedding of firm load to remain compliant. Under what circumstances should the Balancing Authority shed firm load as a last resort to ensure that it remains compliant to the "Control Performance and Disturbance Control Standards"?

Duke Energy does not believe that the Applicability section of the Standard should contain or clarify

requirements of entities to the extent presented in the draft BAL-001-1. As the current definition of Overlap Regulation Service states "A method of providing regulation service in which the Balancing Authority providing the regulation service incorporates another Balancing Authority's actual interchange, frequency response, and schedules into providing Balancing Authority's AGC/ACE equation", Duke Energy would propose that Applicability should be assigned to "Balancing Authority not receiving Overlap Regulation Service". There appear to be incorrect references in the VRF/VSL document. The justification for R1 references BAL-003-1 for Guideline 2 instead of BAL-001-1. The justification for R2 also references BAL-003-1 for Guideline The Compliance Enforcement Authority Section language is not the same as that specified in the Background Information for Quality Reviews dated February 2012.

Comment Form

Project 2010-14.1 Balancing Authority Reliability-based Control BAL-001-1 – Real Power Balancing Control Performance

Please **do not** use this form to submit comments on the proposed revisions to BAL-001-1 Real Power Balancing Control Performance. Comments must be submitted on the [electronic comment form](#) by 8 p.m. **July 3, 2012**. If you have questions please contact [Darrel Richardson](#) (email) or by telephone at (609) 613-1848.

BAL-001-1 Real Power Balancing Control Performance

Background Information:

Control Performance Standard 1 (CPS1) has been retained, and details for calculating CPS1 are included in Attachment 1. Calculation of Reporting Area Control Error (Reporting ACE) has been clarified, and details for calculating Reporting ACE are also included in Attachment 1. The Balancing Authority ACE Limit (BAAL), an interconnection frequency and Balancing Authority ACE measurement, is included in this standard as Requirement 2 and replaces Control Performance Standard 2 (CPS2). Details for the calculation of BAAL are included in Attachment 2.

CPS2 was not designed to address Interconnection frequency. Currently, it measures the ability of a Balancing Authority to maintain its average ACE within a fixed limit of plus or minus a MW value called L10. To be compliant, a Balancing Authority must demonstrate its average ACE value during a consecutive ten minute period was within the L10 bound 90 percent of all 10 minute periods over a one month period. While this standard does require the Balancing Authority to correct its ACE to not exceed specific bounds, it fails to recognize Interconnection frequency.

BAAL is defined by two equations, BAAL low and BAAL high. BAAL low is for Interconnection frequency values less than 60 hertz and BAAL high is for Interconnection frequency values greater than 60 hertz. BAAL values for each Balancing Authority are dynamic and change as Interconnection frequency changes. For example, as Interconnection frequency moves from 60 hertz, the ACE limit for each Balancing Authority becomes more restrictive. The BAAL provides each Balancing Authority a dynamic ACE limit that is a function of Interconnection frequency.

As a proof of concept for the proposed BAAL standard, a BAAL field trial was approved by the NERC Standards Committee and the Operating Committee. Currently there are 13 Balancing Authorities participating in the Eastern Interconnection, 26 Balancing Authorities participating in the Western Interconnection, the ERCOT Balancing Authority, and Quebec. Reliability Coordinators for all interconnections continue to monitor the performance of those participating Balancing Authorities and

provide information to support monthly analysis of the BAAL field trial. As of the end of September 2011, no reliability issues with the BAAL field trial have been identified by any Reliability Coordinator.

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.

1. The BARC SDT has developed two new terms to be used with this standard.

Balancing Authority ACE Limit (BAAL):

The limit beyond which a Balancing Authority contributes more than its share of Interconnection frequency control reliability risk. This definition applies to a high limit (BAALHigh) and a low limit (BAALLow).

Reporting ACE:

The scan rate values of a Balancing Authority’s Area Control Error (ACE) measured in MW as defined in BAL-001 which includes the difference between the Balancing Authority’s actual interchange and its scheduled interchange plus its frequency bias obligation plus any known meter error.

Do you agree with the proposed definitions in this standard? If not, please explain in the comment area below.

Yes

No

Comments:

2. The SDT has modified the definition for the term Interconnection. The new definition is shown below in redline to show the changes proposed.

Interconnection:

When capitalized, any one of the ~~four~~^{three} major electric system networks in North America: Eastern, Western, ~~Texas~~ and ~~Quebec~~^{ERCOT}.

Do you agree with this new definition for Interconnection? If not, please explain in the comment area below.

Yes

No

Comments:

3. The proposed Purpose Statement for the draft standard is:

To control Interconnection frequency within defined limits in support of interconnection frequency.

Do you agree with this purpose statement? If not, please explain in the comment area below.

Yes

No

Comments:

- 4. The BARC SDT has developed Requirement R1 to measure how well a Balancing Authority is able to control its generation and load management programs, as measured by its Area Control Error (ACE), to supports its Interconnection's frequency over a rolling one year period.**

R1. Each Balancing Authority shall operate such that the Balancing Authority's Control Performance Standard 1 (CPS1), as calculated in Attachment 1, is greater than or equal to 100% for the applicable Interconnection in which it operates for each 12 month period, evaluated monthly, to support interconnection frequency.

Do you agree with this Requirement? If not, please explain in the comment area below.

Yes

No

Comments:

- 5. The BARC SDT has developed Requirement R2 to enhance the reliability of each Interconnection by maintaining frequency within predefined limits under all conditions.**

R2. Each Balancing Authority shall operate such that its clock-minute average of Reporting ACE does not exceed for more than 30 consecutive clock-minutes its clock-minute Balancing Authority ACE Limit (BAAL), as calculated in Attachment 2, for the applicable Interconnection in which it operates to support interconnection frequency.

Do you agree with this Requirement? If not, please explain in the comment area below.

Yes

No

Comments: In HQT's fielt trial, frequency limits were defined from 59.9 Hz to 60.1Hz. The proposed methodology in Appendix 2 does not reflect those values since the 3*epsilon methodology leads to 59.937 Hz to 60.063 Hz frequency limits.

- 6. The BARC SDT has developed VRFs for the proposed Requirements within this standard. Do you agree that these VRFs are appropriately set? If not, please explain in the comment area below.**

Yes

No

Comments:

7. The BARC SDT has developed Measures for the proposed Requirements within this standard. Do you agree with the proposed Measures in this standard? If not, please explain in the comment area.

Yes

No

Comments:

8. The BARC SDT has developed VSLs for the proposed Requirements within this standard. Do you agree with these VSLs? If not, please explain in the comment area.

Yes

No

Comments:

9. The BARC SDT has developed a document "BAL-001-1 Real Power Balancing Control Standard Background Document" which provides information behind the development of the standard. Do you agree that this new document provides sufficient clarity as to the development of the standard? If not, please explain in the comment area.

Yes

No

Comments:

10. If you are aware of any conflicts between the proposed standard and any regulatory function, rule order, tariff, rate schedule, legislative requirement, or agreement please identify the conflict here.

Comments:

11. Do you have any other comment on BAL-001-1, not expressed in the questions above, for the BARC SDT?

Comments:

Comment Form

Project 2010-14.1 Balancing Authority Reliability-based Control BAL-001-1 – Real Power Balancing Control Performance

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BAL-001-1 Real Power Balancing Control Performance

Background Information:

Control Performance Standard 1 (CPS1) has been retained, and details for calculating CPS1 are included in Attachment 1. Calculation of Reporting Area Control Error (Reporting ACE) has been clarified, and details for calculating Reporting ACE are also included in Attachment 1. The Balancing Authority ACE Limit (BAAL), an interconnection frequency and Balancing Authority ACE measurement, is included in this standard as Requirement 2 and replaces Control Performance Standard 2 (CPS2). Details for the calculation of BAAL are included in Attachment 2.

CPS2 was not designed to address Interconnection frequency. Currently, it measures the ability of a Balancing Authority to maintain its average ACE within a fixed limit of plus or minus a MW value called L10. To be compliant, a Balancing Authority must demonstrate its average ACE value during a consecutive ten minute period was within the L10 bound 90 percent of all 10 minute periods over a one month period. While this standard does require the Balancing Authority to correct its ACE to not exceed specific bounds, it fails to recognize Interconnection frequency.

BAAL is defined by two equations, BAAL low and BAAL high. BAAL low is for Interconnection frequency values less than 60 hertz and BAAL high is for Interconnection frequency values greater than 60 hertz. BAAL values for each Balancing Authority are dynamic and change as Interconnection frequency changes. For example, as Interconnection frequency moves from 60 hertz, the ACE limit for each Balancing Authority becomes more restrictive. The BAAL provides each Balancing Authority a dynamic ACE limit that is a function of Interconnection frequency.

As a proof of concept for the proposed BAAL standard, a BAAL field trial was approved by the NERC Standards Committee and the Operating Committee. Currently there are 13 Balancing Authorities participating in the Eastern Interconnection, 26 Balancing Authorities participating in the Western Interconnection, the ERCOT Balancing Authority, and Quebec. Reliability Coordinators for all interconnections continue to monitor the performance of those participating Balancing Authorities and

provide information to support monthly analysis of the BAAL field trial. As of the end of September 2011, no reliability issues with the BAAL field trial have been identified by any Reliability Coordinator.

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Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.

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Reporting ACE:

The scan rate values of a Balancing Authority’s Area Control Error (ACE) measured in MW as defined in BAL-001 which includes the difference between the Balancing Authority’s actual interchange and its scheduled interchange plus its frequency bias obligation plus any known meter error.

Do you agree with the proposed definitions in this standard? If not, please explain in the comment area below.

Yes

No

Comments:

In attachment 1, the F_A (Actual Frequency) term is defined and indicates a resolution of ± 0.0005 Hz. This should be changed to align with the BAL-005-0.1b R17 that indicates a frequency resolution ≤ 0.001 Hz.

Additionally, the acronym “ACE” is defined in the Reporting ACE definition but not in the BAAL definition. It should be defined at each usage or at none.

2. The SDT has modified the definition for the term Interconnection. The new definition is shown below in redline to show the changes proposed.

Interconnection:

When capitalized, any one of the ~~four~~three major electric system networks in North America: Eastern, Western, ~~Texas~~ and ~~Quebec~~ERCOT.

Do you agree with this new definition for Interconnection? If not, please explain in the comment area below.

Yes

No

Comments:

3. The proposed Purpose Statement for the draft standard is:

To control Interconnection frequency within defined limits in support of interconnection frequency.

Do you agree with this purpose statement? If not, please explain in the comment area below.

Yes

No

Comments:

4. The BARC SDT has developed Requirement R1 to measure how well a Balancing Authority is able to control its generation and load management programs, as measured by its Area Control Error (ACE), to supports its Interconnection's frequency over a rolling one year period.

R1. Each Balancing Authority shall operate such that the Balancing Authority's Control Performance Standard 1 (CPS1), as calculated in Attachment 1, is greater than or equal to 100% for the applicable Interconnection in which it operates for each 12 month period, evaluated monthly, to support interconnection frequency.

Do you agree with this Requirement? If not, please explain in the comment area below.

Yes

No

Comments:

Although Manitoba Hydro agrees with this Requirement, we suggest the following clarifications to the Requirement wording. The words 'as calculated in Attachment 1' should be replaced with 'calculated in accordance with Attachment 1' for clarity. The reference to 'it' should specify the Balancing Authority for clarity.

5. The BARC SDT has developed Requirement R2 to enhance the reliability of each Interconnection by maintaining frequency within predefined limits under all conditions.

R2. Each Balancing Authority shall operate such that its clock-minute average of Reporting ACE does not exceed for more than 30 consecutive clock-minutes its clock-minute Balancing Authority ACE Limit (BAAL), as calculated in Attachment 2, for the applicable Interconnection in which it operates to support interconnection frequency.

Do you agree with this Requirement? If not, please explain in the comment area below.

Yes

No

Comments:

The reference to 'it' should specify the Balancing Authority for clarity.

6. The BARC SDT has developed VRFs for the proposed Requirements within this standard. Do you agree that these VRFs are appropriately set? If not, please explain in the comment area below.

Yes

No

Comments:

7. The BARC SDT has developed Measures for the proposed Requirements within this standard. Do you agree with the proposed Measures in this standard? If not, please explain in the comment area.

Yes

No

Comments:

8. The BARC SDT has developed VSLs for the proposed Requirements within this standard. Do you agree with these VSLs? If not, please explain in the comment area.

Yes

No

Comments:

9. The BARC SDT has developed a document "BAL-001-1 Real Power Balancing Control Standard Background Document" which provides information behind the development of the standard. Do you agree that this new document provides sufficient clarity as to the development of the standard? If not, please explain in the comment area.

Yes

No

Comments:

10. If you are aware of any conflicts between the proposed standard and any regulatory function, rule order, tariff, rate schedule, legislative requirement, or agreement please identify the conflict here.

Comments:

In attachment 1, the F_A (Actual Frequency) term is defined and indicates a resolution of ± 0.0005 Hz. This should be changed to align with the BAL-005-0.1b R17 that indicates a frequency resolution ≤ 0.001 Hz.

11. Do you have any other comment on BAL-001-1, not expressed in the questions above, for the BARC SDT?

Comments:

Under Applicability Section 4.1.1, the term “CPS1” is used but the acronym is not defined until R1. It should be defined at the first use.

Under the Effective Date Section, the effective date language has a few issues in its drafting. It would be clearer to use the word ‘following’ as opposed to the word ‘beyond’ (and this would also be more consistent with the drafting of similar sections in other standards). The words ‘the standard becomes effective’ in the third line are not needed. The words ‘made pursuant to the laws applicable to such ERO governmental authorities’ may not be appropriate. It’s not the laws applicable to the governmental authorities that are relevant, but the laws applicable to the entity itself. We would suggest wording like ‘or as otherwise made effective pursuant to the laws applicable to the Balancing Authority’. Also, ERO is not defined.

Comment Form

Project 2010-14.1 Balancing Authority Reliability-based Control BAL-001-1 – Real Power Balancing Control Performance

Please **do not** use this form to submit comments on the proposed revisions to BAL-001-1 Real Power Balancing Control Performance. Comments must be submitted on the [electronic comment form](#) by 8 p.m. **July 3, 2012**. If you have questions please contact [Darrel Richardson](#) (email) or by telephone at (609) 613-1848.

BAL-001-1 Real Power Balancing Control Performance

Background Information:

Control Performance Standard 1 (CPS1) has been retained, and details for calculating CPS1 are included in Attachment 1. Calculation of Reporting Area Control Error (Reporting ACE) has been clarified, and details for calculating Reporting ACE are also included in Attachment 1. The Balancing Authority ACE Limit (BAAL), an interconnection frequency and Balancing Authority ACE measurement, is included in this standard as Requirement 2 and replaces Control Performance Standard 2 (CPS2). Details for the calculation of BAAL are included in Attachment 2.

CPS2 was not designed to address Interconnection frequency. Currently, it measures the ability of a Balancing Authority to maintain its average ACE within a fixed limit of plus or minus a MW value called L10. To be compliant, a Balancing Authority must demonstrate its average ACE value during a consecutive ten minute period was within the L10 bound 90 percent of all 10 minute periods over a one month period. While this standard does require the Balancing Authority to correct its ACE to not exceed specific bounds, it fails to recognize Interconnection frequency.

BAAL is defined by two equations, BAAL low and BAAL high. BAAL low is for Interconnection frequency values less than 60 hertz and BAAL high is for Interconnection frequency values greater than 60 hertz. BAAL values for each Balancing Authority are dynamic and change as Interconnection frequency changes. For example, as Interconnection frequency moves from 60 hertz, the ACE limit for each Balancing Authority becomes more restrictive. The BAAL provides each Balancing Authority a dynamic ACE limit that is a function of Interconnection frequency.

As a proof of concept for the proposed BAAL standard, a BAAL field trial was approved by the NERC Standards Committee and the Operating Committee. Currently there are 13 Balancing Authorities participating in the Eastern Interconnection, 26 Balancing Authorities participating in the Western Interconnection, the ERCOT Balancing Authority, and Quebec. Reliability Coordinators for all interconnections continue to monitor the performance of those participating Balancing Authorities and

provide information to support monthly analysis of the BAAL field trial. As of the end of September 2011, no reliability issues with the BAAL field trial have been identified by any Reliability Coordinator.

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.

1. The BARC SDT has developed two new terms to be used with this standard.

Balancing Authority ACE Limit (BAAL):

The limit beyond which a Balancing Authority contributes more than its share of Interconnection frequency control reliability risk. This definition applies to a high limit (BAALHigh) and a low limit (BAALLow).

Reporting ACE:

The scan rate values of a Balancing Authority’s Area Control Error (ACE) measured in MW as defined in BAL-001 which includes the difference between the Balancing Authority’s actual interchange and its scheduled interchange plus its frequency bias obligation plus any known meter error.

Do you agree with the proposed definitions in this standard? If not, please explain in the comment area below.

Yes

No

Comments:

2. The SDT has modified the definition for the term Interconnection. The new definition is shown below in redline to show the changes proposed.

Interconnection:

When capitalized, any one of the ~~four~~^{three} major electric system networks in North America: Eastern, Western, Texas and Quebec~~ERCOT~~.

Do you agree with this new definition for Interconnection? If not, please explain in the comment area below.

Yes

No

Comments:

3. The proposed Purpose Statement for the draft standard is:

To control Interconnection frequency within defined limits in support of interconnection frequency.

Do you agree with this purpose statement? If not, please explain in the comment area below.

Yes

No

Comments: **Delete “in support of interconnection frequency”.**

- 4. The BARC SDT has developed Requirement R1 to measure how well a Balancing Authority is able to control its generation and load management programs, as measured by its Area Control Error (ACE), to supports its Interconnection’s frequency over a rolling one year period.**

R1. Each Balancing Authority shall operate such that the Balancing Authority’s Control Performance Standard 1 (CPS1), as calculated in Attachment 1, is greater than or equal to 100% for the applicable Interconnection in which it operates for each 12 month period, evaluated monthly, to support interconnection frequency.

Do you agree with this Requirement? If not, please explain in the comment area below.

Yes

No

Comments: **This is an existing requirement and was not modified by the standard drafting team.**

- 5. The BARC SDT has developed Requirement R2 to enhance the reliability of each Interconnection by maintaining frequency within predefined limits under all conditions.**

R2. Each Balancing Authority shall operate such that its clock-minute average of Reporting ACE does not exceed for more than 30 consecutive clock-minutes its clock-minute Balancing Authority ACE Limit (BAAL), as calculated in Attachment 2, for the applicable Interconnection in which it operates to support interconnection frequency.

Do you agree with this Requirement? If not, please explain in the comment area below.

Yes

No

Comments: **The SERC OC Standards Review Group is concerned that the reliability impact of violating this requirement is proportional to the size of the balancing authority. For example, PJM, at a size of over 100,000 MW has a much more impact on reliability than SEPA, at less than 2000 MW. We do not understand how to apply VRFs consistently. This may require splitting into multiple VRFs considering the size of the BA.**

- 6. The BARC SDT has developed VRFs for the proposed Requirements within this standard. Do you agree that these VRFs are appropriately set? If not, please explain in the comment area below.**

Yes

No

Comments: **See comments to No. 5 above.**

7. The BARC SDT has developed Measures for the proposed Requirements within this standard. Do you agree with the proposed Measures in this standard? If not, please explain in the comment area.

Yes

No

Comments:

8. The BARC SDT has developed VSLs for the proposed Requirements within this standard. Do you agree with these VSLs? If not, please explain in the comment area.

Yes

No

Comments: **Perhaps VSLs could be graded by the size of the entity in lieu of having multiple VRFs.**

9. The BARC SDT has developed a document "BAL-001-1 Real Power Balancing Control Standard Background Document" which provides information behind the development of the standard. Do you agree that this new document provides sufficient clarity as to the development of the standard? If not, please explain in the comment area.

Yes

No

Comments:

10. If you are aware of any conflicts between the proposed standard and any regulatory function, rule order, tariff, rate schedule, legislative requirement, or agreement please identify the conflict here.

Comments: **No**

11. Do you have any other comment on BAL-001-1, not expressed in the questions above, for the BARC SDT?

Comments: **Should the standard include reporting requirements to the RRO? On Attachment 1, the Interconnection names need to be revised to agree with the Interconnection as stated earlier in question 2.**

“The comments expressed herein represent a consensus of the views of the above named members of the SERC OC Standards Review group only and should not be construed as the position of SERC Reliability Corporation, its board or its officers.”

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