UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Disturbance Control Standard	**)**	**Docket No. RM16-7-000**
Contingency Reserve for Recovery	**)**	
From a Balancing Contingency Event	**)**	
Reliability Standard	**)**	

JOINT COMMENTS
ON NOTICE OF PROPOSED RULEMAKING

Pursuant to the Notice of Proposed Rulemaking (NOPR) issued on May 19, 2016[1] by the Federal Energy Regulatory Commission (Commission), the Independent System Operator operating as the Alberta Electric System Operator (AESO), the California Independent System Operator (CAISO), Electric Reliability Council of Texas, Inc. (ERCOT), the Independent Electricity System Operator of Ontario, Inc. (IESO), Midcontinent Independent System Operator, Inc. (MISO), PJM Interconnection, L.L.C. (PJM), and Southwest Power Pool, Inc. (SPP)[2] (collectively referred to as Joint Commenters) hereby submit comments on the Commission's NOPR to approve NERC Reliability Standard BAL-002-2 (Disturbance Control Standard—Contingency Reserve for Recovery from a Balancing Contingency Event).

I. EXECUTIVE SUMMARY

The Joint Commenters appreciate the opportunity to comment on the Commission's NOPR on proposed BAL-002-2. The following comments, which address the Commission's proposed directives in the NOPR, are premised on several main points:

[1] Notice of Proposed Rulemaking, *Disturbance Control Standard--Contingency Reserve for Recovery from a Balancing Contingency Event Reliability Standard*, 155 FERC ¶ 61,180 (2016) ("NOPR Docket No. RM16-7-000").

[2] The AESO and IESO are not FERC jurisdictional.

1) BAL-002-1 has effectively achieved its purpose of managing Contingency Reserve utilization, which is demonstrated by historically excellent Disturbance Control Standard (DCS) performance.
2) Multiple layers of protection are already in place that guard against Balancing Authorities "leaning on the system," or relying on external resources to meet service to load obligations.
3) The Commission's proposed modifications to BAL-002-2 would result in increased costs to consumers not justified by an equivalent increase in reliability or other benefits.
4) Overall, the proposed changes would lead Responsible Entities to shift their focus from reliability actions to compliance concerns.

II. COMMENTS

Although the Commission's Order No. 693[3] directed NERC to develop a continent-wide contingency reserve policy, the Version 0 and Version 1 BAL-002 standards achieved acceptable results that improved over time. The Joint Commenters do not believe that more stringent requirements around contingency reserve achieve greater reliability than that already achieved by the existing BAL-002 Standard or the proposed Version 2. Furthermore, NERC's approach to contingency reserve proposed in Version 2 provides important flexibility for Balancing Authorities during high-impact, low-frequency events. The Joint Commenters recommend approving BAL-002-2 as filed.

However, if the Commission directs changes regarding recovery from events greater than a responsible entity's Most Severe Single Contingency (MSSC) or the Reserve Restoration

[3] Order No. 693, *Mandatory Reliability Standards for the Bulk-Power System*, 118 FERC ¶ 61,218 (2007), Docket No. RM06-16-000.

Period, the Joint Commenters recommend that the Commission remand BAL-002-2, thereby retaining BAL-002-1 in the interim. A combination of Version 2 and proposed Version 3 changes would likely complicate the industry-wide implementation of a well-understood and well-performing standard.

In addition, the Joint Commenters believe that the Commission's proposed directives raise policy questions. The proposed directives would lead to unjustified Contingency Reserve, which almost by definition results in significant increases to end user costs. These cost increases may not adequately balance against improved reliability.

The Joint Commenters appreciate the opportunity to specifically address the questions posed by the Commission as follows:

1. Proposed directive for NERC to develop modifications that would require reporting ACE recovery within the 15-minute Contingency Event Recovery Period

The Commission proposes to develop modifications to BAL-002-2 that would require reporting Area Control Error (ACE) recovery within the 15-minute Contingency Event Recovery Period unless the relevant Reliability Coordinator (RC) expressly authorizes an extension.[4]

The NOPR describes proposed Requirement 1, Part 1.3.1, which provides an exemption from the 15-minute ACE recovery period based in part on a RC-declared Energy Emergency Alert (EEA), as "not expressly providing a definitive and enforceable deadline for ACE recovery under these circumstances."[5] However, in a multiple-contingency event or during an EEA, there are likely scores of activities occupying the RC's attention. Requiring the Balancing Authority (BA) and RC to conduct a conference call during an EEA to discuss the merits of requests for additional ACE recovery time only complicates these already-challenging conditions.

[4] NOPR Docket No. RM16-7-000 at P 24.
[5] *Id.* at P 21.

There is no discernable reliability benefit to such a requirement. Requiring ACE to be recovered to zero may well aggravate a transmission issue and could require unnecessary shedding of firm load only for the sake of compliance. The RC already has *de facto* approval authority over the BA's response in that if the BA takes actions that harm reliability, the RC may direct corrective action. Moreover, *Attachment 1-EOP-011-1 – Energy Emergency Alerts* already requires certain measures to be taken during the rare but serious system conditions when Contingency Reserve cannot be maintained as a BA transitions from EEA 2 to EEA 3. No additional coordination requirement is necessary.

Multiple-contingency events and EEAs are infrequent enough to be considered exceptional circumstances appropriate for an exemption from the typical measured requirements found in the NERC Reliability Standards. Most BAs experience no EEA events in a given year. The 2016 NERC State of Reliability Report notes there were 10 total EEA Level 2 and Level 3 events in 2015.[6] Accordingly, allowing recovery exceptions during these exceptional circumstances would not create significant risk with respect to ACE recovery responsibilities. In fact, as discussed above, because the focus during such events should be on system recovery 1) imposing a rigid ACE recovery obligation during such conditions could distract from system recovery, and 2) the RC provides secondary independent system recovery oversight and control, which is superior to the BA. For these reasons, establishing a mandatory, inflexible recovery rule during such stressed conditions is arguably counterproductive to effective and reliable system management.

Furthermore, the Joint Commenters believe the exemption from the 15-minute recovery period in BAL-002-2 effectively prevents a BA from being arbitrarily required to shed load in

[6] *State of Reliability 2016* (May 2016) at 38, accessible online at http://www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/2016_SOR_Report_Final_v1.pdf

order to maintain Contingency Reserve. Further, the BA is required to take action up to and including load shed if either the BA or Transmission Operator cannot withstand the next contingency. The Joint Commenters believe that the combination of the infrequency of exceptional circumstances giving rise to EEAs, the benefits associated with flexibility in these circumstances, and the controls provided by existing NERC Reliability Standards outweigh the benefits of a strict ACE recovery period during EEAs and multiple-contingency events.

2. Proposed directive for NERC to develop modifications to ensure that contingency reserves are restored within the 90-minute Contingency Reserve Restoration Period

The Commission proposes modifications to BAL-002-2 to eliminate the potential for unlimited "resets" of the 90-minute restoration window should a series of unexpected contingencies occur.[7] As an alternative, the Commission proposes to credit the required contingency reserve recovery amount for any MW lost due to a Balancing Contingency Event (BCE) following the initial Reportable Balancing Contingency Event (RBCE). The Joint Commenters primary concern with this approach is that, following a unit trip that results in a BCE, the generator's telemetry is often invalid or suspect for some time, and if the BA is unable to accurately quantify the actual MW loss, it may be required to take extreme actions, including shedding firm load, simply to meet the 90-minute contingency recovery requirement. The closer the BCE is to the end of the 90-minute window, the greater the likelihood is that the BA would need to resort to inappropriately extreme measures to avoid violation of the 90-minute requirement. By contrast, allowing a reset of the 90-minute clock in the infrequent event of an intervening BCE after the initial RBCE avoids these unnecessarily rash actions. The practical effect of multiple resets would be that the BA is able to properly focus on reliability rather than

[7] NOPR Docket No. RM16-7-000 at P 29. Under BAL-002-WECC-2, Balancing Authorities must maintain Contingency Reserve, except within the first sixty minutes following an event requiring the activation of Contingency Reserve.

compliance by maximizing the use of its available capacity to address the relevant system conditions in the most effective manner. While contingency reserves certainly contribute to reliability, transmission impacts due to sudden losses of generation present a more immediate threat to reliability than restoring Contingency Reserve.

The likelihood of such an occurrence of multiple independent generation losses absent a catastrophic transmission failure is also very low. The Frequency Response drafting team for BAL-003 analyzed event data and found the probability of four random large generator trips in the Eastern Interconnection in a two hour period to be approximately once in 350 years.[8] NERC-directed research for developing Frequency-related balancing limits estimated a simultaneous independent loss of 4,000 MW in the entire Eastern Interconnection to be once in 500 years.[9] These probabilities reflect the entire Interconnection, not within a single BA. If there are multiple events in a given one to two hour period, it is likely due to multiple-contingency events triggered by weather or major equipment failure.

Further, when an entity is unable to restore Contingency Reserve due to an emergency condition, the NERC Reliability Standards authorize BAs to address those conditions *via* emergency procedures (*see,* e.g., EOP-011). These standards adequately address the reliability risk during those EEA conditions, whether or not they may be due to multiple BCEs.

Based on these factors, the Joint Commenters submit that a series of resets of the 90-minute restoration window is an appropriate way to restore system conditions and restore reserves in a coordinated and effective manner.

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[8] NERC reliability staff conducted a probability analysis in September 2012 using frequency event data collected by the University of Tennessee-Knoxville for January 1, 2006 through September 15, 2012, which showed on average one large generator is lost in the Eastern Interconnection every 7 to 8 days. The probability of four independent large generator trips in a two hour period was one in 350 years.

[9] *DIRECTED RESEARCH TO VALIDATE BALANCE RESOURCES AND DEMAND STANDARD'S PROCEDURES AND DEFINE FREQUENCY-RELATED LIMITS* (September 2015), available at http://www.nerc.com/pa/Stand/2007%2018%20Reliability%20Based%20Control%20FieldTrial%20Tools/PCEreportBRD-SDT_CERTSfinal.pdf.

3. Proposed directive for NERC to develop a new or modified Reliability Standard that addresses the reliability impact of megawatt losses above a responsible entity's Most Severe Single Contingency

The Commission seeks comments on how to address a perceived reliability gap and whether to impose a reasonable obligation for BAs and reserve sharing groups to address scenarios involving megawatt losses above the Most Severe Single Contingency (MSSC) that do not cause energy emergencies.[10]

This proposed directive appears to require operating to N-2 or greater conditions. The concept of operating to N-1 is a precept from the beginning of Interconnected Operations. The first operating reliability criteria in the NAPSIC Operating Manual[11] noted that:

> 1. The bulk power systems will be operated at all times so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency. Multiple outages of a credible nature will be examined and the system operated when practical to protect against instability, uncontrolled separation or cascading outages.

This N-1 wording carried forward into the Preamble of the NERC Operating Manual[12] through at least 2004.[13]

Unless the contingency occurs during light load periods with excess generation, there are only two methods by which a BA can achieve a zero ACE in 15 minutes for events greater than MSSC: 1) significantly increase Contingency Reserves, or 2) shed load to achieve a zero ACE, whether or not an Interconnection Reliability Operating Limit (IROL) was being exceeded.[14]

Based on the existing cost of contingency reserve, the Joint Commenters estimate that doubling current contingency reserves across North America would conservatively be an

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[10] NOPR Docket No. RM16-7-000 at PP 20, 30-34.

[11] Available at http://www.osti.gov/scitech/servlets/purl/5054065.

[12] Available at http://www.nerc.com/docs/docs/blackout/Operations_Report_FINAL.pdf.

[13] NERC no longer actively maintains the NERC Operating Manual.

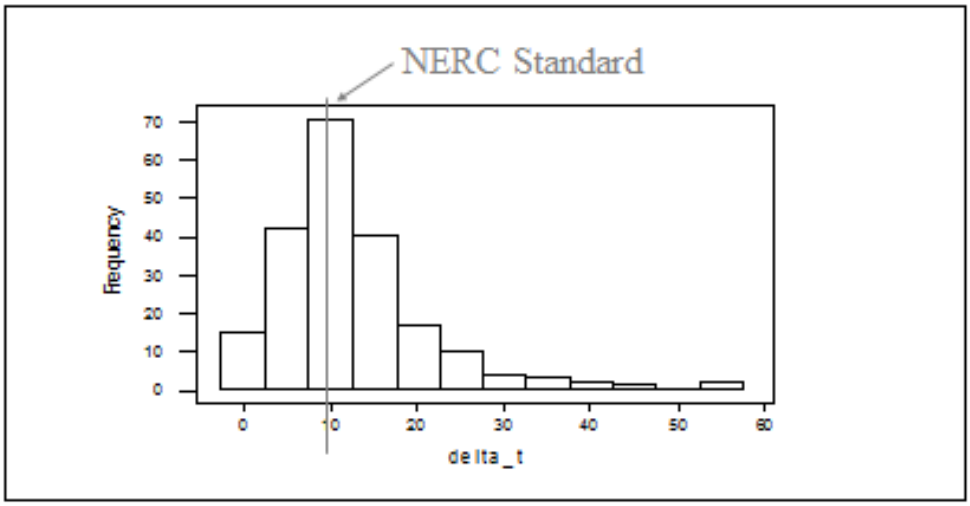
[14] NERC stated in its Petition at 34 that load shed would not be required "to restore Contingency Reserves when those reserves have been depleted, but should be considered a Contingency Reserve for deployment in response to the next event." However, NERC has not addressed the potential need to shed load to return to a zero ACE, which is an important distinction.

additional cost on the order of $150,000,000 to $200,000,000 annually.[15] Of course, because it is always possible to imagine a series of contingencies that would exceed the capabilities of a contingency reserve of *any* size, there can be no certainty that doubling or even tripling the contingency reserve would be sufficient to meet a 15-minute ACE-recovery requirement. Ultimately, determining an appropriate definition for RCBE therefore requires a comparison of the cost of maintaining a higher contingency reserve with the corresponding benefit of that reserve. The Joint Commenters suggest that experience shows that the substantial cost of requiring additional Contingency Reserve would be inadvisable given the infrequency of events exceeding the MSSC.

Further, the reliability gaps described in the NOPR are not supported by available data. When the DCS was first proposed (pre-ERO), the average recovery time for large unit trips was 10 minutes. Data from the NERC Resources Subcommittee shows current recovery time is typically less than five minutes across North America. The State of Reliability Report also notes that for the years 2012 to 2015, 99.7% of the 1,418 DCS events were recovered in less than 15 minutes. Of the 95 events greater than MSSC, 95.8% were recovered in less than 15 minutes. The NERC State of Reliability Report showed no IROL exceedances of over 30 minutes in 2015, which demonstrates that the grid was secure even while zero ACE was not achieved within 15 minutes.

[15] This conservative estimate was calculated with current monthly average spinning reserves and offline supplemental data, and does not account for generation capacity shortfalls, expected pricing variation, etc.

HISTORIC RESPONSE



*Based on frequency recovery from 200 + large unit trips

NERC Resources Subcommittee Data (Performance under Policy 1, pre-DCS)

Without procuring additional Contingency Reserve, Balancing Authorities could meet a 15-minute ACE recovery requirement only by shedding firm load. However, requiring additional firm load to be shed for the sole purpose of ensuring against highly unlikely events should be disfavored.

Not only would a requirement for zero ACE in an N-2 or greater situation be either expensive or disruptive to customers, it could also have a net negative effect on reliability. N-2 or greater events typically occur during severe transmission events (weather, major equipment or protection failures). In these situations, transmission security takes priority over maintaining ACE at zero. Excessive generation dispatch by BAs could interfere with actions taken simultaneously by Transmission Operators and remote BAs to resolve the problems on the transmission system. Additionally, premature attempts to restore Contingency Reserve by the

BA may unwittingly delay the resolution of transmission problems and thereby create a situation in which the Contingency Reserve, because it cannot be delivered, is unusable.

One previously-suggested resolution is for the BA to request permission from the RC to extend the recovery time for an N-2 or greater event. If the BA's dispatch is causing an IROL exceedance or other System Operating Limit (SOL) problems, the issue would be addressed through other NERC Reliability Standards. Furthermore, the Commission's objective is already accomplished in the existing NERC Reliability Standards. By either directing or choosing not to direct emergency action, up to and including load shed, the RC controls the duration of an event.

Multiple layers of protection in real-time mitigate the effects of events greater than MSSC and potential "leaning on the system" by the BA. These protections, already in place in the NERC Reliability Standards, include:

- IRO-005 requires the RC to monitor Frequency and ACE and to take corrective action when needed.
- Frequency is included in the definition of SOL and all operating entities have an obligation to stay within SOLs.
- IRO and TOP requirements both protect against exceedances of transmission limits if the BA is deficient.
- BAL-001-2 R2 (BAAL) protects against ACE that is causing harm to Frequency.

Additionally, the NERC Resources Subcommittee sponsored the development of a tool, the NERC-IA,[16] to notify Balancing Authorities and RCs of events greater than 50 mHz and of more than five minutes. The tool also notes when Frequency has recovered. During the first full year the tool was in use (2008), there were 23 such cases in the East, with the longest lasting 12

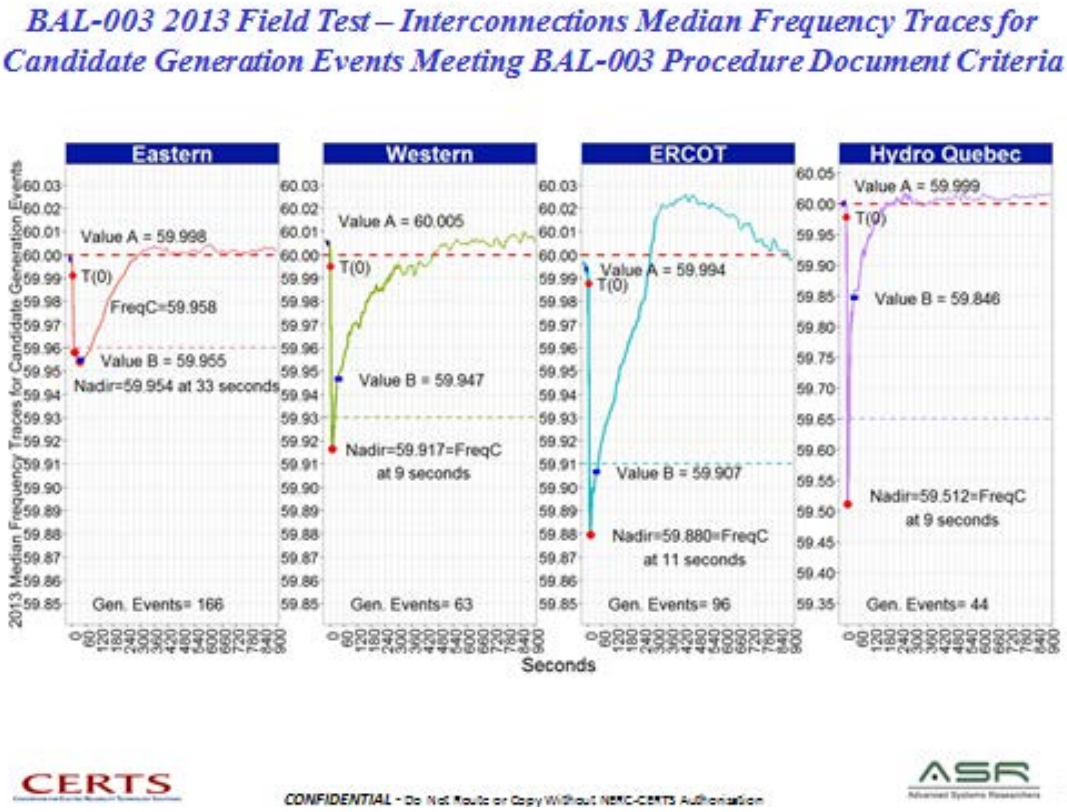
[16] The NERC-IA real-time tool is an automatic, integrated process to identify abnormal interconnections, load-generation unbalances, and to broadcast intelligent alarm descriptions together with possible root-causes and recommended preventive actions to Reliability Coordinators, Operations Management, and Regulators.

minutes. The visibility this tool provides has reduced the number of five-minute excursions significantly. In the last five years, there have been fewer than three per year in the East, and none longer than 10 minutes.

The Joint Commenters respectfully suggest that data exists that supports the approval of BAL-002-2 as filed and addresses the perceived reliability gaps. NERC should leverage its existing State of Reliability Report process to determine the extent of the issue and whether the risk is being adequately addressed. Alternatively, the Joint Commenters suggest the development of more definitive criteria, with sound technical rationale discussed in a technical conference.

Finally, another layer of validation exists that ensures BAs do not "lean on the system." The NERC Resources Subcommittee reviews all large events each quarter to support the BAL-003-1 standard. NERC has observed no cases of prolonged recovery time in any of these reviews.[17]

[17] The events are publicly posted on the NERC website at http://www.nerc.com/comm/OC/Pages/RS/Resources-Subcommittee.aspx



NERC Resources Subcommittee Data (Present Median Recovery Time).
Shared with permission from CERTS.

III. SUMMARY

The Joint Commenters believe the proposed BAL-002-2 addresses the directives from Order No. 693 without presenting any new reliability gaps. The proposed standard provides needed flexibility in rare, but challenging, operating environments. Other layers of protection already exist in NERC Reliability Standards to address losses greater than the MSSC and to limit BA reliance on external resources.

The Commission's proposed changes may result in Responsible Entities shifting focus from reliability, which is an inherent characteristic of this Standard, to taking actions that may be inconsistent with reliability merely to mitigate compliance risk. The Joint Commenters believe the proposed directives would not result in greater reliability and would likely increase the

incidence of unnecessary firm load shed. Furthermore, the proposed directives would result in increased costs to fund a significantly larger Contingency Reserve. Raising the obligation of BAL-002 above MSSC puts the BA in the position of either increasing costs by carrying more Contingency Reserve for no discernable reliability benefit or shedding customer load to achieve a zero ACE even while no operating limits are being violated. None of these results would be in the public interest.

IV. CONCLUSION

For the reasons set forth herein, the Joint Commenters respectfully requests that the Commission consider the aforementioned comments with regard to this proceeding.

Respectfully submitted,

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**Designated to receive service*

Dated: July 25, 2016

CERTIFICATE OF SERVICE

I hereby certify that I have this day e-served a copy of this document upon all parties listed on the official service list compiled by the Secretary in the above-captioned proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2012).

Dated this 25th day of July, 2016 in Carmel, Indiana.

/s/ Julie C. Bunn
Julie C. Bunn

Document Content(s)