

Comments

28. NERC, IRC and Trade Associations disagree with the NOPR proposal, and support use of the median statistical measure. NERC states that the Commission's proposed directive to develop a modification to the methodology for determining the Frequency Response Measure is premature. NERC asserts that the standard drafting team evaluated different approaches for averaging individual event observations to compute a technically sound estimate of Frequency Response Measure, including the median and linear regression analysis. NERC also notes that, in the NOPR, the Commission indicated that NERC provided adequate rationale for using the median to determine the required Frequency Response Measure, and that use of the median is supported by the analyses performed to date.¹

29. Trade Associations and IRC also disagree with the Commission's proposal to direct NERC to develop a modification to the proposed standard and assert that the standard drafting team selected the most appropriate methodology. Trade Associations assert that the standard drafting team's reasoning was "well thought out and balanced considering the advantages and disadvantages of both approaches (i.e., 'median' and 'linear regression')." ² Trade Associations understand that the standard drafting team evaluated both methods and found that the median approach consistently produced a more conservative Frequency Response Measure value, and was significantly less likely

¹ NERC Comments at 5.

² Trade Associations Comments at 5; *see also* IRC Comments at 4.

to result in calculation errors. Thus, Trade Associations support the median methodology because “it is far better to err on the side of having slightly more available reserves than not having enough.”³ Finally, Trade Associations and IRC comment that that the median methodology is less complicated and will minimize the compliance risks and resource burdens of applicable entities. IRC notes that the frequency response measurement process is easily susceptible to distortion due to a very large noise to signal ratio, and that use of the median discards such “outliers,” while results from linear regression may be skewed by such “noise.”

30. BPA raises a concern that use of the median method for determining the Frequency Response Measure “gives equal weight to large and small disturbances.”⁴ In particular, BPA expresses concern with NERC’s proposal to use 20 to 30 events per year for calculating the Frequency Response Measure because targeting a fixed number of events per year may lead to using relatively small (less than 400 MW) events in frequency response calculations. BPA asserts that extrapolating from these small events to large events could lead to misleading indications of the Interconnection and balancing authority’s performance during large events and “undermine the intent” of the Reliability Standard.⁵ BPA recommends the following specific revisions to the frequency response measurement proposal: (1) use resource loss events equal to or greater than 1,000 MW or events with frequency deviations below 59.9 Hz for calculating frequency response,

³ Trade Associations Comments at 5.

⁴ BPA Comments at 2.

⁵ *Id.*

rather than a fixed number of events per year; and (2) use the smallest of actual maximum design frequency or the maximum design delta from NERC Table 1 Interconnection Frequency Response Obligation.

31. In reply comments, NERC responds to BPA's proposed revisions, stating that the values in Table 1 are not static and are revised on an annual basis pursuant to a written process for identifying candidate frequency events and an annual review of the calculations. Further, NERC explains that the methodology set forth in Table 1 of Attachment A to Reliability Standard BAL-003-1 is based on frequency and not the size of events, as suggested by BPA.

Commission Determination

32. The Commission does not adopt the NOPR proposal that NERC develop a modification to replace the use of the median with a more appropriate methodology and, instead, approves the use of the median methodology to determine the required Frequency Response Measure as set forth in Reliability Standard BAL-003-1. As indicated by NERC, the standard drafting team considered various approaches for averaging individual event observations to compute a technically sound estimate of Frequency Response Measure and determined that "the median's superior resiliency to this type of data quality problem [i.e., a data set with outliers] makes it the best aggregation technique at the time."⁶ We also see merit at this time in IRC's explanation that the frequency response measurement process is susceptible to distortion due to a

⁶ NERC Petition at 17-18.

large noise to signal ratio, and that use of the median discards such “outliers.”

Accordingly, we are persuaded that, based on this record, there is sufficient justification for NERC’s use of the median method for determining the required Frequency Response Measure in the initial implementation of Reliability Standard BAL-003-1.

33. Further, with respect to BPA’s concerns regarding NERC’s process for determining the appropriate Frequency Response Measure, we agree with NERC’s explanation that NERC has developed an acceptable methodology for identifying candidate frequency events and an annual review of the calculations.⁷ The methodology developed by NERC is based on frequency and not the size of events. Therefore, if any revisions are necessary, as BPA suggests, they can be implemented via this established review process.⁸

34. In addition, while the use of the median provides an adequate initial means to achieve the objectives of Reliability Standard BAL-003-1, we continue to believe that over the long term the Reliability Standard can be improved by adopting the linear method.⁹ However, we are persuaded by the comments of NERC and others that adopting the linear regression method will insert an additional level of complexity to the process, and a directive to that effect would be premature. Accordingly, as stated above,

⁷ NERC Reply Comments at 3-4.

⁸ *Id.*

⁹ See NOPR, 144 FERC ¶ 61,057 at P 27. One of the recommendations contained in NERC’s Frequency Response Initiative Report states that “[I]inear regression is the method that should be used for calculating Balancing Authority Frequency Response Measure (FRM) for compliance with Standard BAL-003-1-Frequency Response.”

we do not adopt our NOPR proposal to direct that NERC immediately develop a modification to Reliability Standard BAL-003-1 to calculate the Frequency Response Measure using linear regression. Rather, the Commission acknowledges NERC's commitment to studying the use of linear regression¹⁰ and the analysis contained in the Frequency Response Initiative Report,¹¹ and directs NERC to continue its evaluation of the use of the linear regression methodology based upon experience and data collected following the implementation of BAL-003-1 and to submit a report to the Commission within three months after two years of operating experience once Requirement R1 of BAL-003-1 becomes effective (i.e., 27 months from the effective date of Requirement R1). The report should assess the accuracy of the linear regression methodology compared to the median methodology for purposes of determining Frequency Response Measure. Based on this report and actual experience, the Commission may revisit this issue.

B. Determination of Interconnection Frequency Response Obligation

NERC Petition

35. Reliability Standard BAL-003-1 establishes an Interconnection Frequency Response Obligation designed to require sufficient frequency response for each Interconnection to arrest frequency decline even for severe, but possible, contingencies.

¹⁰ NERC Comments at 6 and NERC Petition at 18, fn. 35.

¹¹ See NERC Petition at 17-18; see also *id.*, Exh. F at 72-78.

The methodology for determining each Interconnection’s obligation for obtaining the necessary amount of frequency response is set forth in Attachment A of the Reliability Standard. The Interconnection Frequency Response Obligation is based on the “resource contingency criteria,” which is the largest “Category C” event for the Interconnection,¹² except for the Eastern Interconnection, which uses the largest event and maximum actual change in frequency in the last ten years.¹³ The maximum change in frequency is calculated by adjusting the starting frequency for each Interconnection by the “prevailing UFLS first step,” i.e., under-frequency load shedding for the Interconnection as adjusted by specific information on the frequency deviations for the observed events which make up the data-set used to calculate the Frequency Response Measure.¹⁴ For multiple balancing authority Interconnections, the Frequency Response Obligation is allocated to balancing authorities based on the formula set forth in Attachment A. FRS Form 1 and the underlying data retained by the balancing authorities are used for measuring whether frequency response was provided.

¹² See Reliability Standard BAL-003-1, Attachment A at 1. Category C events are defined in Reliability Standard TPL-003-0 (System Performance Following Loss of Two or More Bulk Electric System Elements), Table 1.

¹³ For the Eastern Interconnection, the largest event in the last ten years is the loss of 4,500 MW of generation, which occurred on August 4, 2007. See Reliability Standard BAL-003-1, Attachment A at 1; Frequency Response Initiative Report at 34-37, 54.

¹⁴ *Id.* Under-frequency load shedding is intended to be a safety net to prevent against system collapse from severe contingencies. The resource contingency criterion is selected to avoid violating the under-frequency load shedding settings. See NERC Petition, Exh. D at 36 (“in general, the goal is to avoid triggering the first step of under-frequency load shedding (UFLS) in the given Interconnection for reasonable contingencies expected”).

NOPR

36. In the NOPR, with respect to the determination of the Interconnection Frequency Response Obligation, the Commission discussed two matters: (1) Eastern Interconnection – prevailing first step of under-frequency load shedding and (2) Western Interconnection – identifying the largest N-2 contingency.

1. Eastern Interconnection – Prevailing UFLS First Step

37. For the Eastern Interconnection, Attachment A to the Reliability Standard identifies 59.5 Hz as the “first step” of under-frequency load shedding in the calculation of the default Interconnection Frequency Response Obligation. Attachment A notes that this set point is “a compromise value set midway between the stable frequency minimum established in Reliability Standard PRC-006-1 (59.3 Hz) and the local protection under frequency load shedding setting of 59.7 Hz used in Florida and Manitoba.”¹⁵ The NERC Frequency Response Initiative Report notes that the Florida Reliability Coordinating Council (FRCC) concluded that the Interconnection Frequency Response Obligation starting frequency of the prevalent 59.5 Hz for the Eastern Interconnection is acceptable because it imposes no greater risk of triggering under-frequency load shedding operation for contingencies internal to FRCC than for contingencies external to FRCC.¹⁶

38. Noting that the actual first-step of under-frequency load shedding for the Eastern Interconnection is 59.7 Hz, the NOPR sought comment on the technical source or support

¹⁵ Reliability Standard BAL-003-1, Attachment A at 2.

¹⁶ See Frequency Response Initiative Report at 4, n.3.

for NERC's statement that the first-step value of 59.5 Hz in the calculation of the Interconnection Frequency Response Obligation imposes no greater risk of under-frequency load shedding operation in FRCC for an external resource loss than for an internal FRCC event. Also, the NOPR sought clarification of whether the intent of the proposal is that FRCC will start shedding load automatically before an event meets the value of 59.5 Hz used in the Reliability Standard to determine the Interconnection Frequency Response Obligation.

Comments

39. NERC, Trade Associations, and MISO submitted comments in support of using the prevailing under-frequency load shedding first step for the Eastern Interconnection of 59.5 Hz. Trade Associations state that they understand that FRCC has evaluated the impact of the proposed standard and has determined that the probability of a load shedding event caused by a generation loss within the Eastern Interconnection is comparable with an event internal to the FRCC region.¹⁷

40. NERC comments that FRCC's 59.7 Hz under-frequency load shedding setting is designed to arrest dynamic transients for system events occurring on the Florida peninsula to avoid separation from the rest of the Eastern Interconnection. NERC states that further analysis by NERC showed that the under-frequency load shedding settings on the Florida peninsula are not susceptible to activation even by very large resource losses within the main body of the Eastern Interconnection. NERC explains that "[u]sing the

¹⁷ Trade Association Comments at 6.

‘generic’ dynamics case available, a follow-on analysis was performed by NERC staff to determine the general order of magnitude of a frequency event that could be sustained by the Eastern Interconnection without violating the 59.7 Hz first step under-frequency load shedding in FRCC. A simulation was run that tripped about 8,500 MW of generation in the southeast United States (north of Florida).”¹⁸ NERC further states that the simulation showed that the lowest frequency resulting from that event would be about 59.76 Hz in southern Florida.

41. NERC further states that the initial nadir of 59.78 Hz in southern Florida from the simulation is lower than the nadir in northern Florida due to the wave properties of the disturbance.¹⁹ Finally, NERC asserts that because the simulation was conducted with nearly twice the 4,500 MW resource loss used to determine the Interconnection Frequency Response Obligation for the Eastern Interconnection, it is prudent to conclude that the smaller resource loss could not generate a transient or momentary system disturbance that would trip the FRCC 59.7 Hz under-frequency load shedding. For these reasons, NERC concludes that the proposed first-step value of 59.5 Hz is adequately supported by technical considerations.²⁰

42. MISO also supports the proposed first-step value of 59.5 Hz for the Eastern Interconnection and asserts that NERC has provided sufficient support for using the

¹⁸ NERC Comments at 13.

¹⁹ The “nadir” is the lowest point at which frequency excursion is arrested. Frequency Response Initiative Report at 13.

²⁰ NERC Comments at 14.

59.5 Hz value. According to MISO, the FRCC 59.7 Hz frequency value reflects local concerns specific to Florida, based on the observation that an event in Florida causes a wider frequency swing locally than what propagates out to the rest of the Eastern Interconnection. MISO asserts that there has been no recorded case of frequency in the Eastern Interconnection declining to 59.7 Hz.²¹ MISO further submits that, given the localized nature of the concerns supporting the first-step value in Florida, and the extreme nature of the event that would be required to drive Interconnection-wide impact, NERC has sufficient justification for establishing 59.5 Hz as the first-step value for the Eastern Interconnection.

Commission Determination

43. The Commission accepts NERC's and MISO's explanation of the technical support for using 59.5 Hz as the "first step" of under-frequency load shedding in the calculation of the default Interconnection Frequency Response Obligation. The Commission also agrees with Trade Associations' assertion that FRCC has evaluated the impact of the proposed standard and has determined that the probability of a load shedding event caused by a generation loss within the Eastern Interconnection is comparable with an event within the FRCC region. Accordingly, the Commission is satisfied with the NOPR responses and takes no further action on this matter.

2. Western Interconnection – Largest N-2 Event

NERC Petition

²¹ MISO Comments at 5.

44. The Interconnection Frequency Response Obligation is based on the largest Category C event, or N-2 (loss of two or more bulk electric system elements) for the Interconnection. The default Interconnection Frequency Response Obligation for the Western Interconnection is based on the loss of two Palo Verde generating station units, which results in a resource contingency criterion of 2,740 MW.²² NERC indicated in its petition that the default Interconnection Frequency Response Obligation calculation scenarios and the calculation of the Frequency Response Measure for the Western Interconnection do not take into account the intentional tripping of generation that will occur during the operation of specific remedial action schemes. According to the Frequency Response Initiative Report, operation of the Pacific Northwest Remedial Action Scheme trips up to 3,200 MW of generation in the Pacific Northwest due to the loss of the Pacific DC Intertie.²³ The Frequency Response Initiative Report recommends that NERC and the Western Interconnection analyze the Frequency Response Obligation allocation implications of the activation of the Pacific Northwest Remedial Action Scheme that trips 3,200 MW of generation for a single contingency.²⁴

NOPR

²² See Frequency Response Initiative Report at 53.

²³ The Pacific Northwest Remedial Action Scheme, among other things, blocks frequency response from a number of generators and Balancing authorities to avoid overloading the Pacific AC ties. See Frequency Response Initiative Report at 62.

²⁴ See *id.* NERC noted that the maximum value of the Pacific Northwest Remedial Action Scheme has been updated to be 2,850 MW. See NERC Petition, Exh. G (Status of Recommendations of the Frequency Response Initiative Report).

45. In the NOPR, the Commission expressed concern regarding whether the N-2 contingency identified as an input to the Attachment A methodology for calculating the Interconnection Frequency Response Obligation accurately identifies the largest N-2 event in the Western Interconnection. The NOPR referenced the Frequency Response Initiative Report, which indicates that the Pacific Northwest Remedial Action Scheme could result in a larger contingency that, if included as an input to the Attachment A calculation, would produce more accurate results.²⁵ Accordingly, the Commission proposed in the NOPR to direct NERC to submit a report that analyzes, with supporting documentation, the implications of the Pacific Northwest Remedial Action Scheme or any other Remedial Action Scheme which involves intentional tripping of greater than 2,400 MW of generation, and whether such a contingency would provide a more accurate basis for the determination of the Western Interconnection default Interconnection Frequency Response Obligation.

Comments

46. Trade Associations comment that they recognize the Commission's issue and have no concerns with a directive mandating the ERO to study the implications of the Pacific Northwest Remedial Action Scheme and other similar arrangements that intentionally involve the tripping of greater than 2,400 MW of generation.

47. BPA comments that "[Remedial Action Scheme] events should not determine the Resource Contingency Criteria in the Western Interconnection" because, *inter alia*,

²⁵ See NOPR, 144 FERC ¶ 61,057 at P 32.

simulation of Remedial Action Scheme events and two Palo Verde events show similar system frequency performance and “RAS events off-load the system stress ... while an unplanned 2 Palo Verde unit outage would increase the system stress.”²⁶

Commission Determination

48. In light of NERC’s December 30, 2013 annual analysis informational filing, we will not adopt our NOPR proposal. In its 2013 annual analysis NERC explains that “[Remedial Action Schemes] in the Western Interconnection that trip generation resources in excess of 2,400 MW for transmission system contingencies should not be used for the resource contingency protection criteria for the Western Interconnection. Because of the location of the resources tripped and the fact that [Remedial Action Schemes] would not be armed to trip those levels of generation under peak conditions, the loss of two Palo Verde units is a larger hazard to the interconnection.”²⁷

Accordingly, the Commission will not direct NERC to submit a report concerning the implications of the Pacific Northwest Remedial Action Scheme or any other Remedial Action Scheme which involves intentional tripping of greater than 2,400 MW of generation, and whether such a contingency would provide a more accurate basis for determining the Western Interconnection default Interconnection Frequency Response Obligation. We expect, however, that NERC will continue to study any modified or new Remedial Action Schemes that may have an impact greater than the tripping of 2,400

²⁶ See BPA Comments at 7 (providing additional rationale for not considering Remedial Action Scheme events).

MW in its annual frequency response analysis, including an assessment of the adequacy of the resource contingency protection criteria for the Western Interconnection.

49. While BPA advocates that Remedial Action Schemes should not be considered in determining the Interconnection Frequency Response Obligation, BPA did not provide support in the record for its claim that activation of Remedial Action Schemes will reduce system stress while the loss of two Palo Verde units will increase it. Contrary to BPA's argument, we believe that it is appropriate to study this matter, as NERC has done, and take possible future action depending on study results because if the obligation is set too low, the Western Interconnection may not have sufficient frequency response to arrest frequency decline.

C. Method of Obtaining Frequency Response

50. In Order No. 693, the Commission directed NERC to develop a modification to BAL-003-0 that includes methods for obtaining frequency response.²⁸ While the Reliability Standard establishes an Interconnection Frequency Response Obligation and allocates this obligation to the balancing authorities within the Interconnection, the Reliability Standard imposes no obligation on resources that are capable of providing frequency response.

²⁷ NERC's 2013 Annual Analysis at 2.

²⁸ Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 375. The Commission directed NERC to develop a modification to BAL-003-0 that "defines the necessary amount of Frequency Response needed for Reliable Operation for each balancing authority with methods of *obtaining* and measuring that the frequency response is achieved." *Id.* (emphasis added).

NOPR

51. In the NOPR, the Commission stated that Reliability Standard BAL-003-1 imposes an obligation, subject to compliance and enforcement, on each balancing authority to obtain frequency response. The Commission recognized, however, that balancing authorities must obtain frequency response from other entities with available resources, and Reliability Standard BAL-003-1 imposes no obligation on those entities to provide frequency response.

52. In the NOPR, the Commission proposed to direct NERC to submit a report 15 months after implementation of BAL-003-1 that provides an analysis of the availability of resources for each balancing authority to meet its Frequency Response Obligation during the first year of implementation.²⁹ The Commission also proposed that the report provide data indicating whether actual frequency response was sufficient to meet each balancing authority's Frequency Response Obligation. Further, the NOPR proposed that, if NERC's findings indicate that the Frequency Response Obligation was not met, NERC should provide appropriate recommendations to ensure that frequency response can be maintained at all times within each balancing authority's footprint.

Comments

53. NERC, Trade Associations, IRC, APS, and ELCON generally support the Commission's proposal that NERC submit a report regarding the availability of resources for frequency response. Trade Associations comment that they "recognize the potential

²⁹ NOPR, 144 FERC ¶ 61,057 at P 34.

benefit of such a study,” but suggest that 20 to 24 months is a more reasonable time frame for a directive. Trade Associations also ask the Commission to exercise care when directing NERC to conduct studies to ensure that scarce resources are not expended unnecessarily.

54. NERC commits to submitting an analysis of resource availability as proposed in the NOPR. However, NERC provides a detailed timeline for implementation and indicates that it will not receive the necessary information from responsible entities until March 24 of the year following the implementation of Requirement R1 of BAL-003-1, beyond the 15 month time frame proposed in the NOPR. Thus, NERC proposes to submit the report “within six months of the validation by the ERO of the Frequency Bias Setting values and computation of the sum of all Frequency Bias Setting values for each Interconnection and determination of the L 10 values for the CPS 2 criterion for each Balancing Authority or, if applicable, confirmation of the Frequency Bias Setting to be used for the calculation of the Balancing Authority ACE limit.”³⁰ NERC also seeks clarification that the study should analyze the availability of resources for both balancing authorities and Frequency Response Sharing Groups, since the latter was not specifically mentioned in the NOPR proposal. NERC states that, upon completion of the analysis, “should the findings indicate that the Frequency Response Obligation was not met, NERC will provide appropriate recommendations.”³¹

³⁰ NERC Comments at 16 (footnote omitted).

³¹ *Id.* at 17.

55. Several commenters, including IRC, APS and BPA, raise concerns regarding the compliance responsibilities of balancing authorities to meet a Frequency Response Obligation. IRC asserts that BAL-003-1 creates an inequitable alignment of compliance responsibility and generator performance capability. IRC states that while the obligation to meet the frequency response requirements lies with the balancing authority, the ability to provide the resources necessary to meet those obligations lies primarily with generators. Therefore, while IRC supports the analysis proposed in the NOPR, IRC also requests that the Commission direct prospective revisions to the Reliability Standard to assign responsibilities based on performance capability. IRC contends that this approach is appropriate because balancing authorities have no control over generators' performance in supporting the Frequency Response Obligation assigned to balancing authorities.

56. BPA agrees with the Commission that Reliability Standard BAL-003-1 does not address the ability of each balancing authority to ensure adequacy of resources to meet its frequency response obligations. According to BPA, there is a proposal in WECC to develop a regional Reliability Standard complementary to NERC BAL-003-1 to address this gap. BPA comments that, until such a standard is developed, each balancing authority must determine how to meet its own frequency response obligation. BPA states that this frequency response, measured by balancing authority interchange, includes not only the response of balancing authority generation but also incremental transmission

losses and natural load response to voltage and frequency.³² Finally, BPA asserts that balancing authorities that have to acquire resources will also need to develop monitoring capabilities to ensure that the contracted resources provide frequency response and that such monitoring will further increase the cost of compliance with Reliability Standard BAL-003-1.

57. APS believes it is appropriate for NERC to study and report on the availability of resources. However, APS asserts it is neither just nor reasonable for a balancing authority to be held to this requirement when frequency response services are simply not available. APS states that until such time that NERC has completed the studies, the results are reviewed, and appropriate solutions are developed to assure that affected entities have the resources available to comply under all conditions, either the implementation of the requirements should be delayed, or in the alternative, those balancing authorities who cannot obtain the required frequency response should be exempt from the proposed requirements.

58. APS also proposes that the Commission take a phased-in approach to compliance obligations to allow adequate time for necessary activities such as testing generation units for ramp-up capability, tuning generation and retesting, as well as time to allow a frequency response market to develop. APS comments that the types of resources a balancing authority has in its portfolio may significantly impact its ability to comply with BAL-003-1 because some resources, such as hydroelectric generation, are more effective

³² BPA Comments at 20.

in responding to frequency declines. APS asserts that it does not have sufficient fast-ramping resources to provide the required frequency response should the Western Interconnection experience an event that results in significant frequency response deviation. To address its concern, APS suggests a revision to the definition of a Balancing Authority's "annual generation" to exclude non-responsive units and apply a higher weighting factor for responsive units. According to APS, this revision would align the allocation of Frequency Response Obligation with a generator's physical ability to provide it.

59. In its reply comments, NERC responds to APS, stating that the standard drafting team determined technical evidence indicates that sufficient frequency response resources would be available for balancing authorities to comply with the requirements of Reliability Standard BAL-003-1.³³ Therefore, NERC contends that there is no need to adjust the implementation plan for Reliability Standard BAL-003-1 on the basis of availability.³⁴ Further, NERC disagrees with APS's suggestion to revise the definition of balancing authority "annual generation," contending that such a change would create a "perverse incentive" for entities to install generating units that are not capable of providing Frequency Response. Further, NERC explains in response to APS that the Reliability Standard is appropriately technology- neutral, does not require every generator to respond and provide Frequency Response, and allows for flexibility since

³³ NERC Reply Comments at 4 (citing NERC Report: State of Reliability 2013 Report (May 2013), Key Finding 3, Page 12).

³⁴ NERC Reply Comments at 4.

Frequency Response is measured on a balancing authority and an Interconnection-wide basis and permits the formation of Frequency Response Sharing Groups.

Commission Determination

60. The Commission adopts the NOPR proposal and directs NERC to submit a report that provides an analysis of the availability of resources for each balancing authority and Frequency Response Sharing Group to meet its Frequency Response Obligation during the first year of implementation. However, NERC indicates in its comments that it needs more than the proposed 15 months to prepare the report based on the time frame for NERC to receive relevant data from applicable entities.³⁵ Accordingly, we direct NERC to submit this report within 27 months of implementation of Requirement R1. The Commission believes that the need for the report is well justified based on the record in the proceeding, including the support of most commenters. While we conclude that BAL-003-1 is reasonable and should be approved, it includes a new methodology for determining the Frequency Response Obligation and the results when applied are not yet known. Further, as discussed above, the ability of balancing authorities and Frequency Response Sharing Groups to meet the obligation is untested. Thus, we believe the required report is an appropriate means to inform us as to whether additional steps are needed on the Frequency Response Obligation and what those might be. The required report should provide data indicating whether actual frequency response was sufficient to meet each balancing authority's Frequency Response Obligation. Further, consistent

³⁵ See NERC Comments at 16.

with NERC's representation in its comments, the Commission directs that, upon completion of the required analysis, should the findings indicate that the Frequency Response Obligation was not met, NERC shall provide appropriate recommendations to ensure that frequency response can be maintained at all times within each balancing authority's footprint.³⁶

61. In response to the concerns expressed by the IRC, BPA and APS that balancing authorities may not have control over adequate resources necessary to support the Frequency Response Obligations assigned to the balancing authorities, we will not forego compliance or delay implementation. Certainly, a balancing authority's ability or inability to draw on the necessary resources to meet the compliance obligations of BAL-003-1 might be a potential mitigating factor in a compliance action, depending on the efforts made to obtain resource commitments. Moreover, NERC and its stakeholders had, and still have, the option to propose a Reliability Standard imposing obligations directly on resources, if they find it appropriate. (Similarly, we may consider a directive for such a Standard or other options such as market or tariff mechanisms, if appropriate.) However, we are not persuaded that a blanket waiver or delay in compliance is warranted.

62. While we share concerns regarding the ability of balancing authorities and Frequency Response Sharing Groups to meet the Frequency Response Obligation pursuant to BAL-003-1, we do not believe that such changes are warranted based on the

³⁶ See NERC Comments at 17.

current record in the proceeding. Rather, a recent NERC study indicates that sufficient frequency response resources would be available for balancing authorities to comply with the requirements of Reliability Standard BAL-003-1.³⁷ Further, as noted by NERC, Reliability Standard BAL-003-1 provides flexibility, for example by allowing entities to form Frequency Response Sharing Groups to meet the Frequency Response Obligation. Likewise, we are not persuaded by APS that a change to the definition of balancing authority annual generation is warranted at this time, and we are concerned that APS's suggestion would change the resource-neutral approach of the standard.

63. We do not discount the concerns of APS and others regarding resource availability. However, we believe that the prudent course is to have NERC complete the directed report. The Commission will review NERC's report, any related recommendations from NERC, and the record developed in Docket No. AD13-8 regarding the market implications of frequency response requirements,³⁸ to determine whether additional action is warranted. However, if prior to the deadline for the report NERC learns that a lack of resource availability could prevent achieving the purpose of Reliability Standard BAL-003-1, (e.g., balancing authorities are experiencing problems procuring sufficient resources to satisfy their frequency response obligations), NERC

³⁷ See NERC Reply Comments at 4 (citing NERC Report: State of Reliability 2013 Report (May 2013), Key Finding 3, Page 12). See also APS Comments at 8 (“[a]s NERC Reported in its recent State of Reliability 2013 Report, from 2009 to 2012 interconnection frequency response performance, and expected frequency response ... has been higher than the recommended interconnection frequency response obligation”).

³⁸ See *Market Implications of Frequency Response and Frequency Bias Setting Requirements*, 144 FERC ¶ 61,058 (2013).

should immediately report that to the Commission together with appropriate recommendations for mitigation.³⁹

Premature Withdrawal of Primary Frequency Response

NERC Petition

64. In its petition, NERC indicated that, while the standards drafting team addressed the early withdrawal of primary frequency response, there are no requirements that address this issue and it remains a concern.⁴⁰ Specifically, during the initial recovery from the loss of a generator, a gap can occur if a significant amount of primary frequency response is withdrawn before the secondary response is fully activated. As previously noted, the Interconnection Frequency Response Obligation for each Interconnection is a function of the resource contingency criteria and the maximum change in frequency.⁴¹

³⁹ For example, in such circumstances, NERC could look to regional Reliability Standard BAL-001-TRE-01, approved concurrently with this Final Rule, which contains provisions for assuring frequency response in the ERCOT Interconnection.

⁴⁰ See NERC Petition, Exh. D (Frequency Response Standard Background Document) at 19 (“the intentional withdrawal of response before frequency has been restored to schedule can cause a decline in frequency beyond that which would be otherwise expected. This intentional withdrawal of response is highly detrimental to

reliability. Therefore, it can be concluded in general that sustained response has a higher reliability value than un-sustained response.”).

⁴¹ The maximum change in frequency is an amount of frequency deviation based on the loss of the identified resource contingency that will not trigger under-frequency load shedding.

65. NERC's Frequency Response Initiative Report states that "[w]ithdrawal of primary frequency response is an undesirable characteristic associated most often with digital turbine-generator control systems using set point output targets for generator output. These are typically outer-loop control systems that defeat the primary frequency response of the governors after a short time to return the unit to operating at a requested MW output."⁴² The Frequency Response Initiative Report recommends measuring and tracking frequency response sustainability trends.⁴³ The Frequency Response Initiative Report also recommends that "NERC should include guidance on methods to reduce or eliminate the effects of primary frequency response withdrawal by outer-loop unit or plant control systems."⁴⁴

NOPR

66. In the NOPR, the Commission explained that "following the sudden loss of generation, the automatic and immediate increase in power output by resources providing primary frequency control seeks to quickly arrest and stabilize the frequency of the interconnection, usually within 30 seconds or less. After this rapid primary frequency response, AGC provides secondary frequency response to return frequency to the scheduled value in time frames of several minutes after the loss of generation."⁴⁵

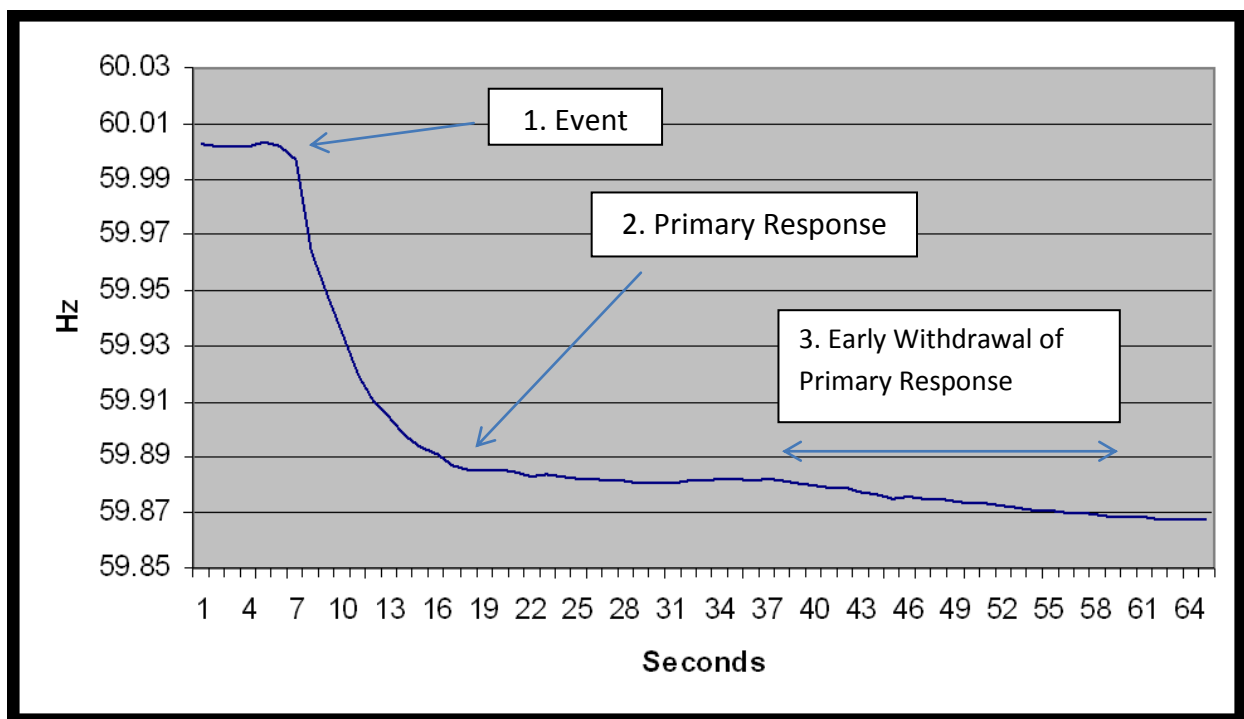
⁴² NERC Petition, Exh. F (Frequency Response Initiative Report) at 31.

⁴³ *Id.* at 35. The Frequency Response Initiative Report also recognizes unit characteristics and operating philosophies as typical causes.

⁴⁴ *Id.* at 41-42.

⁴⁵ NOPR, 144 FERC ¶ 61,057 at P 35.

However, the withdrawal of a significant amount of primary frequency response before the secondary frequency response is activated can cause a further drop in frequency response. This drop in frequency is illustrated by the following diagram:⁴⁶



67. In the NOPR, the Commission expressed concern that Reliability Standard BAL-003-1 does not adequately address the reliability issue created by the withdrawal of primary frequency response prior to activation of secondary frequency response. The withdrawal of primary frequency response before the activation of resources providing secondary frequency response may lead to under-frequency load shedding and possible cascading outages. Accordingly, the Commission proposed to direct NERC to develop a

⁴⁶ *Id.* P 35 (citing Frequency Response Initiative Report at 35, fig. 21).

modification to BAL-003-1 to address the concern of premature withdrawal of primary frequency response prior to the activation of secondary frequency response.

Comments

68. NERC disagrees with the need for the proposed directive. First, NERC asserts that Form 1 of the Reliability Standard addresses premature withdrawal of frequency response and suggests that experience with the actual implementation of the Reliability Standard will better indicate whether premature withdrawal is an issue that requires revisions to the Reliability Standard and, if necessary, definitions of the scope and parameters of the potential issue. Second, NERC notes that the premature withdrawal issue could be impacted by the Commission's ongoing effort to determine whether action is necessary to coordinate the requirements of the Reliability Standard with tariffs and market rules.⁴⁷ Third, NERC asserts the issue of premature withdrawal can be addressed with other mechanisms rather than a revision to the Reliability Standard. Finally, NERC states that it "commits to monitoring the issue of premature withdrawal on a going-forward basis and will submit an informational filing two years after Requirement R1 of Reliability Standard BAL-003-1 becomes effective."⁴⁸

69. NERC maintains that the standard drafting team accounted for the issue of premature withdrawal of frequency response in the calculation of the B-value averaging period within the Frequency Response Measure. NERC states that "[t]he team

⁴⁷ See *Market Implications of Frequency Response and Frequency Bias Setting Requirements*, 144 FERC ¶ 61,058 (2013).

⁴⁸ NERC Comments at 7.

recognized that there would be more AGC response in the 20 to 52 second period, but the team also recognized that the 20 to 52 second period would provide a better measure of squelched response from outer loop control action. The 20 to 52 second period was selected because it would indicate squelched response from outer-loop control and *provide incentive to reduce response withdrawal.*"⁴⁹ NERC further explains that if there is withdrawal of primary frequency response during the 20 to 52 second interval, the metric will have a lower value, which will then lower an entity's median score thereby impacting compliance with Requirement R1 of Reliability Standard BAL-003-1.

70. NERC also maintains that, while Reliability Standard BAL-003-1 applies to balancing authorities and Frequency Response Sharing Groups, the premature withdrawal issue applies to generators. Therefore, NERC asserts, the withdrawal issue could be addressed with alternative mechanisms, including other Reliability Standards or guidelines. NERC further asserts that there are emerging technologies that can and will affect withdrawal, including energy storage devices. NERC notes that the premature withdrawal issue could be affected by whatever tariff or market solutions the Commission may adopt in related Docket AD13-8. For these reasons, NERC believes the Commission's proposed directive requiring a specific solution, i.e., a modification to BAL-003-1 Reliability Standard, is premature. NERC states that, consistent with the recommendations in the Frequency Response Initiative Report, it will evaluate whether a modification to Reliability Standard BAL-003-1 is necessary to address premature

⁴⁹ NERC Comments at 9 (citing NERC Petition, Exh. D at 13).

withdrawal and will submit an informational filing to the Commission two years after Requirement R1 of Reliability Standard BAL-003-1 becomes effective.⁵⁰

71. Trade Associations disagree with the Commission's concern over premature withdrawal of frequency response. Trade Associations state that Reliability Standard BAL-003-1, along with other Reliability Standards awaiting implementation, such as BAL-001-2, sufficiently addresses this concern. Trade Associations assert that the Eastern Interconnection has significant inertia which buffers the initial drop in frequency in major events making premature primary frequency response withdrawal more apparent. Trade Associations state that the exemplary post-contingent recovery of all Interconnections' frequency as demonstrated over time supports their view that premature withdrawal is not a significant factor at this time. Finally, Trade Associations state that the desired outcome of automatic generation control for a balancing authority should result in a dispatch of resources to meet the secondary control requirements of NERC BAL-001. Based upon the overall balance of resources and demand, Trade Associations assert that automatic generation control may at times, guide individual regulating resources within a balancing authority, where a positive ACE exists, to withdraw energy (i.e., to reduce ACE) to meet the secondary control requirements of CPS2 under Reliability Standard BAL-001-1. Trade Associations assert that the response of such a

⁵⁰ *Id.* at 10.

unit would be to withdraw support, thereby resulting in an outcome contrary to the desire to sustain frequency response.⁵¹

72. IRC states that the Commission's concern about premature withdrawal of frequency response is unwarranted. IRC maintains that the Commission should adopt a more comprehensive perspective, taking into account frequency response and withdrawal patterns over an extended period of time and across Interconnections to understand the potential impact of premature withdrawal. IRC states that data collected and analyzed during the standard drafting team's field trial indicated how quickly and steadily frequency is, on average, brought back to a stable level over a five minute response window in all three Interconnections. IRC explains that the standard drafting team considered data regarding the mean frequency recovery rate (mHz/Sec) for all frequency-related events in each of the major Interconnections from 2010 to 2013. IRC states that early withdrawal of primary frequency response has not been a significant problem because "most responses are incomplete at the time that frequency has been initially arrested and the additional response has generally been sufficient to make up for more than these unpreventable reductions in response."⁵²

73. ELCON states that secondary frequency response (Regulation) is primarily delivered through automatic generation control, which is governed by Reliability Standard BAL-005-0.2b. That Reliability Standard contains requirements applicable to

⁵¹ Trade Associations Comments at 8-9.

⁵² IRC Comments at 10.

balancing authorities which therefore, ELCON states, have “the responsibility to ensure its operability.”⁵³ ELCON further states that Reliability Standard TOP-003-1 calls for generator operators to coordinate planned outages with transmission operators, who are required to share that information with balancing authorities. Therefore, ELCON asserts that “[t]his means that the [balancing authority] is aware of all AGC capacity that will be unavailable due to planned maintenance well ahead of time—and can plan mitigating actions accordingly.”⁵⁴ ELCON also asserts that Reliability Standard PRC-024-1 has requirements intended to ensure that generator operators can ride through specifically defined frequency deviations, “which can best assure their availability when needed for secondary frequency response support.”⁵⁵ ELCON suggests that generator concerns with possible violations of Reliability Standard PRC-024-1, such as dropping off-line during a frequency transient within the standard’s “no-trip zones,” could provide incentives against premature withdrawal.

74. BPA states that it shares the Commission’s concerns on early withdrawal of frequency response and provides a recorded frequency response withdrawal by a combined cycle plant.⁵⁶ BPA states that the withdrawal was caused by load controllers implemented at many power plants and suggests that load controllers include a frequency bias term, similar to automatic generation control, to allow plants to sustain their

⁵³ ELCON Comments at 8.

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ BPA Comments at 14-15.

frequency response. BPA asserts that the sustainability of frequency response is essential not only for Interconnection system frequency support, but also for voltage stability when the response withdrawal causes excessive loading on stability-limited transmission paths.⁵⁷

Commission Determination

75. The Commission is persuaded not to adopt the NOPR proposal to require NERC to develop a modification to Reliability Standard BAL-003-1 to address premature withdrawal of frequency response. The Commission believes that the nature and extent of the problems that could result from the premature withdrawal of primary frequency response, and how best to address it if necessary, will be better understood after NERC and balancing authorities have more experience with Reliability Standard BAL-003-1. Accordingly, in light of NERC's December 30, 2013 annual analysis informational filing, the Commission expects NERC to continue to evaluate the impact of the withdrawal of primary frequency response before secondary frequency response is activated in its annual analyses.

76. The Commission recognizes BPA's concerns about the early withdrawal of frequency response, particularly the possibility that load controllers may prematurely over-ride primary frequency response. However, we agree with NERC that the need to take action, including requiring load controllers to include a frequency bias term similar

⁵⁷ *Id.* at 15.

to AGC to sustain frequency response or otherwise modifying Reliability Standard BAL-003-1, should be decided after we have actual experience with the Reliability Standard.

Light Load Case Study

NOPR

77. In the NOPR, the Commission highlighted NERC's conclusion in its Frequency Response Initiative Report that "[s]ustainability of primary frequency response becomes more important during light-load conditions when there are generally fewer frequency-responsive generators online."⁵⁸ Light load conditions require special consideration because inertia, i.e., the resistance to a change in the motion of an object, plays a crucial role in how fast frequency declines following the sudden loss of generation.⁵⁹ In the NOPR, the Commission further explained that "[W]hen the inertia on the system is low (i.e. fewer generators on line), the loss of generation creates a steeper frequency excursion and thus the need for faster frequency response."⁶⁰

78. In the NOPR, the Commission focused on the resource contingency criterion in Reliability Standard BAL-003-1 for calculating the Interconnection Frequency Response Obligation for the Eastern Interconnection, and the potential concerns with the use of an

⁵⁸ NOPR, 144 FERC ¶ 61,057 at P 39 (quoting Frequency Response Initiative Report at 32).

⁵⁹ *Id.* Inertia is provided from the stored energy in the rotating mass of the turbine-generators and synchronous motors on the Interconnection. *See* NERC Petition, Exh. D at 16-17.

⁶⁰ *Id.* (quoting Frequency Response Initiative Report at 40). The reduction in inertia also drives a need for higher speed response to frequency excursions.

event that took place during heavy system load conditions. The use of a generic governor stability case in the stability simulation testing for the Eastern Interconnection resource contingency criteria used in the determination of the Interconnection Frequency Response Obligation represented conditions far different than light-load conditions. This raises questions regarding whether, and by what amount, light load conditions would lower system inertia and load response. The Frequency Response Initiative Report recommended the development of a new light-load case study, and the re-simulation of the resource contingency criterion for the Eastern Interconnection Frequency Response Obligation.⁶¹ According to NERC, the Eastern Interconnection Reliability Assessment Group is preparing an updated generic governor 2013 summer light-load case (from the 2012 case series), and NERC will be evaluating the Eastern Interconnection Frequency Response Obligation during the expected light-load conditions.⁶²

79. The Commission agreed with NERC that the study of light-load scenarios is useful in determining an appropriate Interconnection Frequency Response Obligation, especially

⁶¹ NERC Petition, Exh. F, Frequency Response Initiative Report at 99.

⁶² NERC Petition, Exh. G. A study conducted by the National Renewable Energy Laboratory explored the relationship between system disturbance and grid frequency perturbation. *See* National Renewable Energy Laboratory, Eastern Frequency Response Study (May 2013). A key finding is that the dynamic model of the Eastern Interconnection can be adjusted to more closely capture the observed behavior. In particular, the assumed amount of generation with governor controls activated was increased to model the contingency used in calculating the Eastern Interconnection Frequency Response Obligation. In addition, a light load power flow case was selected with the expectation that it would represent one of the more challenging conditions for the Eastern Interconnection with respect to frequency response. *See* <http://www.nrel.gov/docs/fy13osti/58077.pdf>.

for the Eastern Interconnection.⁶³ Accordingly, the Commission proposed to direct NERC to submit the results of the light-load case, together with NERC's recommendations on whether further actions are warranted.

Comments

80. BPA, Trade Associations, and IRC submitted comments agreeing with the Commission that the study of light-load scenarios is useful in determining an appropriate Interconnection Frequency Response Obligation, especially for the Eastern Interconnection.

81. IRC states that it does not oppose the development of a new light-load case study, but believes that better modeling data needs to be collected before an accurate study can be conducted. IRC states that “[i]n particular, inaccurate modeling of governor deadbands and adjustments to model governor performance based on observed performance for frequency excursions will lead to inaccurate assumptions of performance for extreme events during light-load.”⁶⁴ IRC encourages the Commission to direct that NERC partner with industry to compile the appropriate information needed to ensure an accurate case study, and to review that study through an industry stakeholder process.

⁶³ According to NERC, “[m]odeling of frequency response characteristics has been a known problem since at least 2008, when forensic modeling of the Eastern Interconnection required a ‘de-tuning’ of the existing [Multiregional Modeling Working Group] dynamics governor to 20% of modeled (80% error) to approach the measured frequency response values from the [August 4, 2007] event.” See NERC Petition, Exh. F, Frequency Response Initiative Report at 35.

⁶⁴ IRC Comments at 11.

Finally, the IRC states that while it agrees that a new light-load case study would be useful, the study should also look at tools to estimate frequency response in real time.

82. BPA states that while frequency response is expected to be lower during off-peak light load conditions, there have not been a sufficient number of events under light load conditions to confirm the severity of the problem. BPA states that currently all WECC regions are exceeding their frequency response obligations.

83. The Trade Associations support the Commission's proposal to direct NERC to submit their light-load case study and recommendations.

Commission Determination

84. The Commission adopts the proposal in the NOPR and directs NERC to submit the results of the Eastern Interconnection Reliability Assessment Group's light-load case, using actual turbine governor response data. Additionally, the Commission directs NERC to submit a recommendation on whether further actions are warranted no later than 15 months after implementation of the Final Rule. Further, the report should discuss any appropriate changes to the Interconnection Frequency Response Obligation warranted by the study.

Assignment of Violation Risk Factors and Violation Severity Levels

Violation Risk Factor for Requirement R1

NOPR

85. In the NOPR, the Commission proposed to approve each violation risk factor assignment NERC proposed for a requirement of the proposed Reliability Standard, with

one exception. The Commission indicated that NERC did not adequately justify assignment of a medium violation risk factor to Requirement R1, which establishes the Frequency Response Measure that a balancing authority must achieve to arrest a decline in system frequency. While NERC asserted that a violation of this requirement will not cause bulk electric system instability, separation or cascading failures because “a balancing authority’s previous year’s Frequency Bias setting is included within its ACE equation and would provide support for the contingency,” the Commission indicated that this explanation does not apply to Requirement R1. The Commission noted that the ACE equation provides input to secondary frequency control, which differs from the primary control needed to arrest a frequency decline, as established by Requirement R1. The Commission proposed to direct NERC to assign a high violation risk factor to Requirement R1 because (1) NERC described frequency response as a critical component to the reliable operation of the Bulk-Power System, indicating that Requirement R1 does not impose merely an administrative burden, and (2) the medium violation risk factor that the Commission approved for each BAL-003-0.1b requirement does not apply to Requirement R1 because it has no equivalent in that standard.⁶⁵ The Commission sought comments on this proposal.

Comments

86. Trade Associations state that while Requirement R1 may merit a high violation risk factor, responsible entities must achieve an annual Frequency Response Measure as

⁶⁵ NOPR, 144 FERC ¶ 61,057 at P 42.

calculated in accordance with Attachment A to Reliability Standard BAL-003-1. The Trade Associations therefore observe that it would be inappropriate to apply the violation risk factor for Requirement R1 to a single event rather than to an annual Frequency Response Measure.⁶⁶

87. Commenting that the standard drafting team took a rational approach to its violation risk factor assignments, and that each such assignment appears appropriate and well-reasoned to approximate the impact of a violation on reliability, IRC requests that the Commission accept the medium violation risk factor for Requirement R1 as developed by the standard drafting team and agreed to by industry.⁶⁷

88. APS disagrees with the Commission's proposal to assign a high violation risk factor to Requirement R1. APS agrees with NERC that a violation of this requirement will not cause Bulk Electric System instability, separation or cascading failures. APS maintains that frequency response in the Western Interconnection is and has been stable. APS states that there are almost forty balancing authorities in the Western Interconnection, and even if individual balancing authorities should fall short of their obligation, there is no measurable risk to the Interconnection.⁶⁸

89. APS also states that the worst case scenario from a violation of Requirement R1 is some loss of load due to under-frequency load shedding. APS contends that over the last fifteen years in the Western Interconnection, frequency has not declined below 59.7 Hertz

⁶⁶ Trade Associations Comment at 10-11.

⁶⁷ IRC Comments at 12.

⁶⁸ APS Comments at 9.

for a generation loss of 3,000 megawatts or less. APS states that the first under-frequency load shedding in the Western Interconnection occurs at 59.5 Hertz, and hence, there has not been a significant impact to the bulk electric system for loss of generation. APS submits that a medium violation risk factor is appropriate.⁶⁹

Commission Determination

90. We direct NERC to change the violation risk factor for Requirement R1 to “high,” as proposed in the NOPR. No commenter disagreed with the Commission’s observation that Requirement R1 addresses primary frequency control that is necessary to arrest frequency decline within seconds after it begins. Without sufficient primary frequency control, a frequency decline may not be arrested in sufficient time to prevent instability, uncontrolled separation or cascading failures. While APS maintains that frequency in the Western Interconnection is and has been stable, that stability depends on compliance with Requirement R1 by balancing authorities that have sufficient resources to meet Requirement R1. The fact that one entity’s violation of Requirement R1 may be offset by the efforts of others is not a basis for ignoring or downplaying the substantial risk posed by inadequate frequency response. Accordingly, we conclude that a “high” violation risk factor for Requirement R1 is appropriate. We agree with Trade Associations that Requirement R1 mandates achievement of an annual Frequency Response Measure, and that compliance with that requirement cannot be determined by a single event.

2. Violation Severity Levels for Requirement R1

⁶⁹ APS Comments at 9.

NOPR

91. In the NOPR, the Commission proposed changes to NERC's proposed violation severity level assignments for Requirement R1. NERC proposed two violation severity levels depending upon whether a balancing authority or a Frequency Response Sharing Group has an annual Frequency Response Measure "less negative than its Frequency Response Obligation by more than 1 percent but by at most 30 percent or 15 MW/0.1Hz, whichever one is the greater deviation from its [Frequency Response Obligation]." This violation would have a "lower" severity level if "[t]he summation of the Balancing authorities' [Frequency Response Measure] within an Interconnection was equal to or more negative than the Interconnection's [Interconnection Frequency Response Obligation]," and a "high" severity level if this summation "did not meet its [Interconnection Frequency Response Obligation]." Based on these two possibilities for this summation, NERC proposed either a "medium" severity level and a "severe" severity level for a balancing authority or Frequency Response Sharing Group with an Frequency Response Measure that is "less negative than its [Frequency Response Obligation] by more than 30% or by more than 15 MW/0.1 Hz, whichever is the greater deviation from its [Frequency Response Obligation]." ⁷⁰

92. The Commission proposed that NERC modify its severity level assignments for Requirement R1 to remove references to performance by other entities or otherwise so as to address a concern that NERC assigned these severity levels partly on performance of

⁷⁰ NOPR, 144 FERC ¶ 61,057 at P 43.

Requirement R1 by all other responsible entities in the Interconnection in which a violator is located. The Commission concluded that it would be unfair to base a penalty on a responsible entity in part upon the collective compliance or lack of compliance by independent entities, because: (1) NERC's sanction guidelines focus violation severity levels on a violator's deviation from required performance, not the risk the violation is expected to pose to reliability or performance by other entities; and (2) a balancing authority or Frequency Response Sharing Group subject to Requirement R1 does not control any other responsible entity's compliance with this requirement.⁷¹ The Commission sought comments on its proposal.

Comments

93. APS agrees with the Commission's proposal that NERC change Requirement R1 violation severity level assignments that are in part based on the performance of other entities in the Interconnection. However, APS contends that there is no justification for a "severe" violation severity level applicable to this requirement. APS comments that the violation severity level should be "low" for a responsible entity missing its annual Frequency Response Obligation by small amounts (less than 20 percent) and "medium" for missing by a larger amount (greater than 20 percent).⁷²

94. IRC states that the standard drafting team took an appropriate, rational approach to its violation severity level proposal, taking into account that frequency response is an

⁷¹ *Id.* P 44.

⁷² APS Comments at 9-10.

interconnection-wide service, not balancing authority specific. IRC contends that a single balancing authority should not be penalized for a 10 percent decrease in response, where frequency response is otherwise sufficient amongst its surrounding balancing authorities and the reliability of the Interconnection as a whole is not in jeopardy. IRC asserts that, in contrast, a 10 percent decrease in frequency response within the Interconnection as a whole clearly would signal a reliability issue. IRC contends that, by suggesting that the VSLs for Requirement R1 be modified to remove references to performance by other entities, the Commission essentially suggested that a small deficiency within a single balancing authority is equivalent to deficient frequency response within an Interconnection, and should be equivalently penalized as such.⁷³

⁷³ IRC Comments at 12-13.