144 FERC ¶ 61,058
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Market Implications of Frequency Response and Frequency Bias Setting Requirements — Docket No. AD13-8-000

NOTICE OF REQUESTS FOR COMMENTS

(July 18, 2013)

1. On March 29, 2013, NERC filed a petition for the approval of proposed Reliability Standard BAL-003-1 (Frequency Response and Frequency Bias Setting). In a Notice of Proposed Rulemaking (NOPR) issued concurrently with this Notice, the Commission proposes, pursuant to 215(d) of the Federal Power Act (FPA),[1] to approve the proposed Reliability Standard.[2] As discussed in the NOPR, the proposed Reliability Standard establishes a minimum Frequency Response Obligation for each Balancing Authority, provides a uniform calculation of frequency response, sets forth procedures for establishing Frequency Bias Settings at values closer to actual Balancing Authority frequency response, and encourages coordinated automatic generation control (AGC) operation. These matters are not addressed in any currently-effective Reliability Standards. Because the proposed Reliability Standard addresses a gap in reliability, as well as certain directives from Order No. 693,[3] the Commission proposes in the NOPR to approve the proposed Reliability Standard.

2. Notwithstanding the proposal to approve the proposed Reliability Standard, the Commission seeks comment on the potential market and commercial impacts of certain of the requirements of the proposed Reliability Standard. The Commission seeks comment on the particular issues discussed below, as well as any other market-related

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[1] 16 U.S.C. § 824o (2006).

[2] *Frequency Response and Frequency Bias Setting Reliability Standard*, 144 FERC ¶ 61,057 (2013) (NOPR); Petition of the North American Electric Reliability Corporation for Approval of Proposed Reliability Standard BAL-003-1, Frequency Response and Frequency Bias Setting (NERC Petition).

[3] *Mandatory Reliability Standards for Bulk-Power System*,Order No. 693, FERC Stats. & Regs. ¶ 31,242 (2007).

implications (e.g., implications on the need for compensation for provision of frequency response services, impacts on availability of transmission capacity, energy or ancillary services to the market, etc.) of the requirements in the proposed Reliability Standard. The Commission is not proposing changes to proposed Reliability Standard BAL-003-1 regarding the market-related issues raised in this Notice.[4] Instead, these comments will inform the Commission's consideration of whether potential future actions are necessary under sections 205, 206 and/or 215(d)(5) of the Federal Power Act to coordinate the requirements of the proposed Reliability Standard with tariffs and markets rules subject to the Commission's jurisdiction.

Frequency Bias Setting

3. As explained in the NOPR, frequency bias is an input used in the calculation of a Balancing Authority's area control error (ACE) to account for the power changes associated with primary frequency response. The Frequency Bias Setting is intended to simulate the actual primary frequency response in order to accurately determine the power imbalance within a balancing authority when the system frequency is not exactly at scheduled frequency.[5] NERC proposes that if a Balancing Authority uses a fixed Frequency Bias Setting that it would be set at the greater (in absolute value) of between 100 and 125 percent of a Balancing Authority's Frequency Response Measure as calculated on FRS Form 1,[6] or the Interconnection minimum as determined by the ERO.

4. NERC describes the process for the calculation of the Interconnection minimum and in particular the process NERC will use to review and potentially adjust the minimum Frequency Bias Setting.[7] Following the first year,[8] NERC will review the Frequency Bias Setting data submitted by the Balancing Authorities, and if the Frequency Bias Setting exceeds (in absolute value) the Interconnection's total natural frequency response by 0.2 percentage points of the peak load (expressed in MW/0.1Hz), the minimum Frequency Bias Setting for the Balancing Authorities within that

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[4] Comments on the NOPR should be filed in Docket No. RM13-11-000.

[5] The system frequency is normally at 60 Hz but may be scheduled at other values.

[6] The proposed Reliability Standard would require each Balancing Authority to achieve an annual Frequency Response Measure that is equal to or more negative than its Frequency Response Obligation.

[7] *See* NERC Petition, Exh. C.

[8] For the first year, the Frequency Bias Setting for the Eastern and Western Interconnection would be set at 0.9 percent of non-coincident peak load.

Interconnection may be reduced (in absolute value). In addition, NERC in coordination with the regions of each Interconnection will monitor the impact on frequency performance, control performance, and system reliability of any reduction of the minimum Frequency Bias Setting, and the reduction of the minimum Frequency Bias Setting will be reversed and prospective reductions not implemented if unexpected or undesirable impacts occur, such as sluggish post-contingency restoration of frequency to schedule or control performance problems.

5. Frequency response which does not match the Frequency Bias Setting results in a systematic error in the determination of power balance that causes Balancing Authorities (that are following their ACE) to overproduce secondary frequency response through automatic generation control (AGC). During normal operation, a Balancing Authority achieving a zero ACE would actually be over-generating whenever the frequency is below 60 Hz. During a contingency, every Balancing Authority would record a change in their ACE and respond as if they each had a contingency even though only one of the Balancing Authorities actually had the contingency. Such results can create loop flows and inadvertent interchange, which in turn can create imbalances on neighboring systems and lower the amount of transmission capacity that is available to the market.[9]

6. The Commission seeks comment on the potential market and commercial impacts of allowing the minimum Frequency Bias Setting to be different than actual frequency response for prolonged periods, and how such impacts may be addressed in future versions of the proposed Reliability Standard, in market rules and tariffs, or by other means.

Including Transmission System Limitations and Historical Use

7. The proposed Reliability Standard includes a formula to determine a Balancing Authority's Frequency Response Obligation based on generation and load within the Balancing Authority in proportion to the Interconnection Frequency Response

[9] The Commission notes that the currently-effective BAL-003-0 Reliability Standard requires a minimum Frequency Bias Setting equal in absolute value to one percent of the Balancing Authority's estimated yearly demand per tenth of a Hz change in frequency (MW/0.1Hz). When the NERC policies that form the basis for that standard were developed, the Frequency Bias Setting was equal to or greater than the observed frequency response. *See* NERC Policy 1 – Generation and Performance, approved by NERC Board of Trustees on Oct. 8, 2002 (section 1.1 – Bias Setting to Match Frequency Response; section 1.1.4 – Minimum Bias Setting for Control Areas that Serve Native Load). For most Balancing Authorities today, however, the calculated amount of frequency bias is significantly greater (in absolute value) than their actual frequency response characteristic. *See* NERC Petition at 19.

Obligation. Transmission limitations or historical transmission system use are not considered in the formula. However, the location of the resources providing primary frequency response relative to the resources that are the cause of a frequency variation can have an impact on the transmission system.

8. When an event occurs within an Interconnection, frequency response resources throughout the Interconnection autonomously and automatically respond, resulting in power flows across interfaces and flowgates. Over time, Balancing Authorities observe these flows and, together with the results of system studies, set aside Transmission Reliability Margins (TRM) sufficient to accommodate them.[10] These historical flows are an indicator of how each Balancing Authority has relied on, or supported, other Balancing Authorities, as well as the transmission limitations affecting delivery of frequency response. Excluding historical flows and transmission limitations from consideration during the calculation of each Balancing Authority's Frequency Response Obligation would appear to allow some Balancing Authorities to continue "leaning" on other Balancing Authorities and could also result in lower TRM set-asides, making increased transmission capacity available for market transactions.

9. The Commission seeks comment on the potential market and commercial impacts of not accounting for transmission limitations and historical flows when calculating each Balancing Authority's Frequency Response Obligation, and how such impacts may be addressed in future versions of the proposed Reliability Standard, in market rules and tariffs, or by other means.

Allocation of Credit for Load Resources

10. The proposed Reliability Standard requires NERC to use the resource contingency criteria of each interconnection to calculate the Interconnection Frequency Response Obligation.[11] However, for the Western Interconnection, NERC proposes to reduce the Interconnection Frequency Response Obligation by applying "a credit for load resources" that subtracts the performance of load-side resources (such as frequency responsive demand response) from the resource contingency criteria before calculating the Interconnection Frequency Response Obligation.[12] This reduction has the effect of

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[10] *See* Reliability Standard MOD-008-1 - Transmission Reliability Margin Calculation Methodology. This calculation includes generation dispatch, parallel path flows, operating reserve actions, flows due to reserve sharing, inertial response and Frequency Bias Settings.

[11] *See* NOPR, 144 FERC ¶ 61,057 at P 28.

[12] *See* NERC Petition, Exh. F at 52-53 (credit for load resources of 300 MW for WECC). No credit for load resources is applied in the Eastern Interconnection.

crediting the entire Interconnection with the frequency responsive load resources located in particular Balancing Authorities, instead of allowing a Balancing Authority in which the load resources are located to benefit from their performance in achieving its own Frequency Response Obligation. No similar credit is applied at the Interconnection-level for conventional generation and other resources used to provide frequency response.

11. The Commission seeks comment on the potential commercial and market impacts of crediting the entire Western Interconnection for load resources and how such impacts may be addressed in future versions of the proposed Reliability Standard, in market rules and tariffs, or by other means.

Comment Procedures and Contact Information

12. Interested parties should submit comments on or before the date on which comments are due on the NOPR.[13] Reply comments in response to comments on this Notice should be filed two weeks after that date. Comments, identified by Docket No. AD13-8-000, may be filed in the following ways:

- Electronic filing through http://www.ferc.gov/. Documents created electronically through word processing software should be filed in native applications or print-to-PDF format and not in scanned format.

- Mail/Hand Delivery: Those unable to file comments electronically may mail or hand-deliver comments to: Federal Energy Regulatory Commission, Secretary of the Commission, 888 First Street, NE, Washington, DC 20426.

  For further information contact:

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  Or

[13] Comments are due on the NOPR 60 days from the day of its publication in the Federal Register.

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By direction of the Commission.

Kimberly D. Bose,
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