

Standards Authorization Request Form

When completed, please email this form to:
sarcomm@nerc.com

NERC welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards. Please use this form to submit your request to propose a new or a revision to a NERC Reliability Standard.

Request to propose a new or a revision to a Reliability Standard

Title of Proposed Standard:	BAL-003-1 – Frequency Response and Frequency Bias Setting		
Date Submitted:	2/17/2017		
SAR Requester Information			
Name:	Jerry Rust – Designated Representative For Frequency Response Sharing Group (18 BAs)		
Organization:	Frequency Response Sharing Group		
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SAR Type (Check as many as applicable)			
<input type="checkbox"/>	New Standard	<input type="checkbox"/>	Withdrawal of Existing Standard
<input checked="" type="checkbox"/>	Revision to Existing Standard	<input type="checkbox"/>	Urgent Action

SAR Information

Industry Need (What is the industry problem this request is trying to solve?):

There are several problems with respect to the existing Standard:

- The IFRO calculation in BAL-003-1 needs to be revised due to inconsistencies identified in the 2016 Frequency Response Annual Analysis (FRAA) such as the IFRO values with respect to Point C and varying Value B, the Eastern Interconnection Resource Contingency Protection Criteria, evaluation of t_0 and clarification of language in the 2016 Frequency Response Annual Analysis (FRAA) Report.

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- The IFRO calculation in BAL-003-1 is retrospect and has no bearing on real-time reliability
- Allocation of the IFRO to the BAs has no reflection of real-time situation; it is predicated on two-year old information.
- The applicability to the FRSG or a BA that is not part of an FRSG is not tied to any ability to provide response, since response is either from generator or load. The BA is responsible for balancing, frequency load response is inherient to load characteristics and non controllable unless load is shed. Generator response is controllable through proper governor operation thus there is direct applicability to Generator Owners and Operators.
- The arbitrary allocation formula assumes all BAs have exactly the same characteristics, such as load response, mix and type of generation, and others, which is not true, and thus is not providing comparability across all BAs.
- FRM is calculated using net interchange actual which assumes all BAs have exactly the same settings for response, where one large BA could have a governor and or speed controller setting with zero deadband and set to respond at twice their allocated requirement, that may result in the apparent suppressing of the adjacent BA’s response, since measurement is interchange. In addition, BAL-003-1 appears to drive an arbitrary market and pricing, thus it is not market neutral.
- The FRM measurement period (20-52 seconds) is too far beyond the event to accurately measure the frequency-response provided (10-20 seconds) to arrest the frequency deviation. FRM should be measured correctly and obligated to all the correct responsible parties within an Interconnection.
- The intent of the Standard is to assure adequate Frequency Response for the Interconnection. The standard should address the adequate amount of Frequency Response to arrest sudden frequency deviations within an Interconnection. The standard must be able to measure all types of Frequency Response and credit the providers. The current standards doesnot reflect different types of Frequency Response and the timing of such response.

Purpose or Goal (How does this request propose to address the problem described above?):

Revise the BAL-003-1 standard in a two phase approach

First phase address:

- the inconsistencies in calculation of IFROs for Interconnection Frequency Response performance changes of Point C and/or Value B;
- the Eastern Interconnection Resource Contingency Protection Criteria;
- the evaluation of t_0 ; and,

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- clarification of language in Attachment A, i.e. related to Frequency Response Reserve Sharing Groups (FRSG) and the timeline for Frequency Response and Frequency Bias Setting activities. Please refer to the 2016 FRAA Report for additional information.

Second phase address:

- Assign the ability to control and provide Frequency Response to the correct applicable entity;
- Tie Frequency Response to real-time reliability;
- Eliminate arbitrary and non-comparable formulas;
- Establish a process to measure Frequency Response that is not an arbitrary estimate using NetActual Interchange;
- Establish a process that reflects measurement of real-time reliability associate with frequency response;
- Reflect real-time topology of BES and capability and variances in types of response;
- Eliminate the incorrect signals to the market for arbitray pricing and conditions; and
- Develop a more correct real-time reliability standard.

Identify the Objectives of the proposed standard’s requirements (What specific reliability deliverables are required to achieve the goal?):

For Phase 1, please refer to the 2016 Frequency Response Annual Analysis (FRAA) Report.

For Phase 2, modify the standard reflecting real-time with the correct responsible entity identified.

Brief Description (Provide a paragraph that describes the scope of this standard action.)

For Phase 1, during the 2016 annual evaluation of the values used in the calculation of the IFRO, the above mentioned problems were identified. The scope of the work will be to (1) address the inconsistency in the CBR ratio, (2) reevaluate the Resource Contingency Protection Criteria for each interconnection, (3) reevaluate the frequency nadir point limitations (currently limited to t_0 to $t+12$), and clarify language in the 2016 Frequency Response Annual Analysis (FRAA) Report. Please refer to the 2016 FRAA Report for additional information.

For Phase 2, the FRSG has identified the above issues and the unintended consequences, without addressing real-time reliability. The scope of the work will be to (1) establish a real-time reliability standard addressing the necessary frequency response to maintain reliability, (2) establish

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comparability for the correct responsible entity, (3) develop real-time measurements incorporating topology difference, and (4) eliminate the incorrect indicators.

Detailed Description (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR. Also provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)

For Phase 1:

- Consider revising the BAL-003-1 standard concerning #1 above through the standards development process to correct the inconsistency in the CBR ratio. The CBR ratio in the IFRO calculation couples Point C and Value B together, resulting in IFRO trends that do not align with the intent of the standard. Improvement in Value B with no change in Point C (improving recovery phase) would result in higher obligation to be carried, essentially penalizing improved performance.
- Consider revising the BAL-003-1 standard concerning #2 above through the standards development process to modify the Resource Contingency Protection Criteria. The Resource Contingency Protection Criteria for each interconnection should be revised to help ensure sufficient primary frequency response is maintained. The Eastern Interconnection uses the “largest resource event in last 10 years”, which is the 4 August 2007 event. The standard drafting team should revisit this issue for modifications to BAL-003-1 standard, and the Resources Subcommittee should recommend how the events are selected for each interconnection.
- Consider revising the BAL-003-1 standard concerning #3 above through the standards development process to revisit the frequency nadir point used in the calculation. Many events, particularly in the Eastern Interconnection due to its large synchronous inertia, tend to have a frequency nadir point that exceeds the $t_0 + 12$ seconds specified in BAL-003-1. Therefore, some events are characterized with a Point C value that is only partially down the arresting period of the event and does not accurately reflect the actual nadir. BAL-003-1 should be modified to allow for accurate representation of the Point C nadir value if exceeding $t_0 + 12$ seconds. The actual event nadir can occur at any time, including beyond the time period used for calculating Value B ($t_0 + 20$ through $t_0 + 52$ seconds), and may be the value known as Point C' which typically occurs from 72 to 95 seconds after t_0 .
- Consider revising BAL-003-1 Attachment A to provide clarity to the intent with particular attention to FRSGs and the timeline for Balancing Authority Frequency Response and Frequency Bias Setting.

Please refer to the 2016 FRAA Report for additional information.

For Phase 2:

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- Consider revising BAL-003-1 standard to reflect real-time measurement of frequency performance vs. a two year old allocation.
- Consider revising BAL-003-1 Standard to reflect the correct applicable entity that controls and provides frequency response.
- Consider revising BAL-003-1 Standard to reflect comparability among the applicable entities.
- Consider revising BAL-003-1 Standard to eliminate arbitrary allocation of responsibility.
- Consider revising BAL-003-1 Standard to eliminate the incorrect signals that have created unintended consequences.

Reliability Functions

The Standard will Apply to the Following Functions (Check each one that applies.)

<input type="checkbox"/> Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator’s wide area view.
<input checked="" type="checkbox"/> Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
<input type="checkbox"/> Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/> Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/> Resource Planner	Develops a one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/> Transmission Planner	Develops a one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input type="checkbox"/> Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
<input type="checkbox"/> Transmission Owner	Owns and maintains transmission facilities.

Reliability Functions	
<input type="checkbox"/> Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
<input type="checkbox"/> Distribution Provider	Delivers electrical energy to the end-use customer.
<input checked="" type="checkbox"/> Generator Owner	Owns and maintains generation facilities.
<input checked="" type="checkbox"/> Generator Operator	Operates generation unit(s) to provide real and reactive power.
<input type="checkbox"/> Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input type="checkbox"/> Market Operator	Interface point for reliability functions with commercial functions.
<input type="checkbox"/> Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the end-use customer.

Reliability and Market Interface Principles	
Applicable Reliability Principles (Check all that apply).	
<input checked="" type="checkbox"/>	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input checked="" type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input checked="" type="checkbox"/>	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.

Reliability and Market Interface Principles	
Does the proposed Standard comply with all of the following Market Interface Principles?	Enter (yes/no)
1. A reliability standard shall not give any market participant an unfair competitive advantage.	Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure.	Yes
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.	Yes
4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.	Yes

Related Standards	
Standard No.	Explanation
None	

Related SARs	
SAR ID	Explanation
None	

Related SARs	

Regional Variances	
Region	Explanation
ERCOT	None.
FRCC	None.
MRO	None.
NPCC	None.
RFC	None.
SERC	None.
SPP	None.
WECC	None.

Version History

Version	Date	Owner	Change Tracking
1	June 3, 2013		Revised
1	August 29, 2014	Standards Information Staff	Updated template