

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-003-1.1 – Frequency Response and Frequency Bias Setting | | |
| Date Submitted: | | | |
| SAR Requester Information | | | |
| Name: | David Lemmons – Chair of the Project 2017-01 BAL3 SAR Drafting Team | | |
| Organization: | Project 2017-01 BAL3 SAR Drafting Team | | |
| Telephone: | 303.807.7949 | Email: | David.Lemmons@ethosenergygroup.com |
| 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?):

The revisions to this standard are proposed to be approached in phases; however, the Standard Drafting Team (SDT) will determine the priority for each of the specific tasks. The revisions proposed in ~~the first~~ Phase I are intended only to correct inconsistencies identified through ~~use-implementation~~ of the standard and to improve efficiencies and effectiveness of the administration associated with the standard. Revisions proposed for ~~the second~~ Phase II are modifications intended to align the standard more closely with its purpose.

SAR Information

Phase I

The supporting documents for BAL-003-1.1 were developed using engineering judgment on the data collection and process needed to determine the interconnection Frequency Response Obligation (IFRO), as well as the processing of raw data to determine compliance. Now that the standard is in place and the data is available for analysis, minor errors in assumptions, as well as process inefficiencies, have been identified. It is expected that as Frequency Response improves, the approaches embedded in the standard for annual samples may need to be modified.

~~In addition to fixing the inconsistencies outlined below, the drafting team may separate the administrative and procedural items and reassign them to an alternative process subject to Electric Reliability Organization (ERO) and North American Electric Reliability (NERC) Operating Committee approval.~~

The items that need to be addressed are to:

- Revise the IFRO calculation in BAL-003-1 due to issues identified in the [2016 Frequency Response Annual Analysis \(FRAA\) Report](#), such as the IFRO values with respect to Point C and varying Value B;
- Reevaluate the interconnections' Resource Contingency Protection Criteria;
- Reevaluate the frequency nadir point limitations (currently limited to t_0 to $t+12$);
- Review and modify as necessary Attachment A of the Reliability Standard to remove administrative tasks and provide additional clarity, e.g., related to Frequency Response Reserve Sharing Groups (FRSG) and the timeline for Frequency Response and Frequency Bias Setting activities; and
- Make enhancements to the BAL-003-1.1 FRS Forms that include, but may not be limited to, the ability to collect and submit FRSG performance data.

~~In addition to fixing the inconsistencies outlined above, the SDT may separate the administrative and procedural items and propose that they be reassigned to an alternative process subject to Electric Reliability Organization (ERO) and North American Electric Reliability (NERC) Operating Committee approval.~~

Phase II

The intent of the Reliability Standard is to ensure sufficient Frequency Response for each interconnection. Allocation of the responsibility to provide Frequency Response needs to reflect current conditions of the grid and correspond~~be commensurate~~ with the entities which provide and/or coordinate its provision.

- Both the IFRO calculations and the allocation of IFROs to reliability entities are retrospective (up to 2 years). The review should determine if there are alternate methodologies which consider

| SAR Information |
|--|
| <p>characteristics affecting Frequency Response (e.g., load response, mix and type of generation, Balancing Authority Area (BAA) footprint changes) to make allocation as equitable as possible;</p> <ul style="list-style-type: none"> • Although Balancing Authorities (BAs) and FRSGs are responsible for coordination and/or management of Frequency Response from both resources and loads, response from resources is not addressed. The review should determine if additional reliability entities should have responsibility (e.g., Generator Operators (GOPs)) for provision of generator governor response); and • Review the measurement methodology of Frequency Response (both System and equipment level): <ul style="list-style-type: none"> ○ The Frequency Response Measure (FRM) should be reviewed to ensure that over-performance by one entity does not negatively impact the evaluation of performance by another. |
| Purpose or Goal (How does this request propose to address the problem described above?): |
| <p><u>Phase I</u></p> <p>Review and revise the BAL-003-1.1 Reliability Standard and process documents to address the items listed in Phase I above. Additionally, <u>the SDT should consider removing</u> the supporting procedural and administrative processes from Attachment A shall be considered for incorporation into ERO-approved reference document(s) such that timely process improvements can be made as future lessons are learned.</p> <p>For additional information, please refer to the 2016 FRAA Report.</p> <p><u>Phase II</u></p> <p>Review and revise the BAL-003-1.1 Reliability Standard subsequent to Phase I and process documents to address the items listed in Phase II above.</p> |
| Identify the Objectives of the proposed standard’s requirements (What specific reliability deliverables are required to achieve the goal?): |
| <p>To address the issues with the Reliability Standard referenced above, including those that were described in the 2016 FRAA Report.</p> |
| Brief Description (Provide a paragraph that describes the scope of this standard action.) |
| <p><u>Phase I</u></p> <p>During the 2016 annual evaluation of the values used in the calculation of the IFRO, the above-mentioned issues <u>listed under Phase I</u> were identified. The scope of the work will be to (1) address the inconsistency in the ratio of Point C to Value B, (2) reevaluate the Resource Contingency Protection</p> |

SAR Information

Criteria for each interconnection, (3) reevaluate the frequency nadir point limitations (currently limited to t_0 to $t+12$), (4) clarify language in Attachment A, and (5) make enhancements to the BAL-003-1.1 FRS Forms that include, but may not be limited to, the ability to collect and submit FRSG performance data and identify opportunities to make current processes more efficient.

For additional information on items #1, 2 and 3, please refer to the 2016 FRAA Report.

Phase II

The scope of the work will be to (1) revise the Reliability Standard to address the Real-time aspects of Frequency Response necessary to maintain reliability, (2) ensure comparability of and applicability to the appropriate responsible entities, (3) develop measurements to incorporate Real-time and resource and load characteristics, and (4) ensure equitability of performance measurement.

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.)

Phase I

Consider revising the BAL-003-1.1 Reliability Standard concerning Bullet 1 of Phase I above through the standards development process to correct the inconsistency in the ratio of Point C to Value B. According to the FRAA Report, this 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 obligations to be carried, essentially penalizing improved recovery performance.

Consider revising the BAL-003-1.1 Reliability Standard concerning Bullet 2 of Phase I above through the standards development process to modify the Resource Contingency Protection Criteria (RCPC). The RCPC 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 August 4, 2007 event. The ~~standard drafting team~~SDT should revisit this issue for modifications to the BAL-003-1 Reliability Standard, and the Resources Subcommittee (RS) should recommend ~~how~~ the criteria used to identify events ~~are selected~~ for each interconnection.

Consider revising the BAL-003-1.1 Reliability Standard concerning Bullet 3 of Phase I 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

SAR Information

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 beyond $t_0 + 12$ 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 in the 72 to 95 second range after t_0 .

Consider revising BAL-003-1.1 Attachment A to provide clarity of intent giving particular attention to FRSGs and the timeline for Balancing Authority Frequency Response and Frequency Bias Setting Activities. Consider transferring supporting procedural and process steps from Attachment A into an ERO and NERC Operating Committee approved Reference Document or Reliability Guideline.

Consider revising the BAL-003-1.1 Reliability Standard concerning [Bullet 5 of Phase I](#) above through the standards development process to provide enhancements of the FRS Forms that include, but may not be limited to, the ability to collect and submit FRSG performance data.

Phase II

Consider revising the BAL-003-1.1 Reliability Standard to:

- Make the IFRO calculations and associated allocations 1) ~~be~~ more reflective of current conditions, 2) consider all characteristics affecting Frequency Response (e.g., load response, mix and type of generation), 3) include all applicable entities, and 4) be as equitable as possible; and
- Make the FRM 1) ensure that over-performance by one entity does not negatively impact the evaluation of performance by another, 2) measure types/periods of response in addition to secondary Frequency Response, particularly primary Frequency Response, 3) include all applicable entities, and 4) make allocations as equitable as possible.

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. |
| <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. |

| Reliability 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 checked="" 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 checked="" 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 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. |
| Does the proposed Standard comply with all of the following Market Interface Principles? | |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Enter (yes/no) 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 |
| MOD-027-1 | This standard applies to GOPs and requires verification of Turbine/Governor and Load Control or Active Power/Frequency Control Functions. Modifications to the BAL-003-1.1 Reliability Standard will need to coordinate with/complement MOD-027-1 to ensure there is no overlap or gap of requirements for governor performance. |
| EOP-005-2 | Consider impacts to EOP-005-2. |
| BAL-001-TRE-1 | Consider impacts to BAL-001-TRE-1. |
| | |

| Related SARs | |
|--------------|-------------|
| SAR ID | Explanation |
| None | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| Regional Variances | |
|--------------------|-------------|
| Region | Explanation |
| ERCOT | None. |
| FRCC | None. |

| Regional Variances | |
|--------------------|-------|
| 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 |