

Standard Authorization Request Form

Title of Proposed Standard	Frequency Response
Request Date	11/25/06
Revised Date	06/30/07

SAR Requestor Information	SAR Type (Put an 'x' in front of one of these selections)	
Name Terry Bilke	<input checked="" type="checkbox"/>	New Standard
Primary Contact Terry Bilke	<input type="checkbox"/>	Revision to existing Standard
Telephone (317) 249-5463 Fax (317) 249-5994	<input type="checkbox"/>	Withdrawal of existing Standard
E-mail tbilke@midwestiso.org	<input type="checkbox"/>	Urgent Action

Purpose/Industry Need

Frequency Response, a measure of an Interconnection's ability to stabilize frequency immediately following the sudden loss of generation or load, is a critical component to the reliable operation of the bulk power system, particularly during disturbances and restoration. The proposed standard's intent is to collect data needed to accurately model existing Frequency Response. There is evidence of continuing decline in Frequency Response in the three Interconnections over the past 10 years, but no confirmed reason for the apparent decline. The proposed standard requires entities to provide data so that Frequency Response in each of the Interconnections can be modeled, and the reasons for the decline in Frequency Response can be identified. Once the reasons for the decline in Frequency Response are confirmed, requirements can be written to control Frequency Response to within defined reliability parameters.

Reliability Functions

The Standard will Apply to the Following Functions (Check box for each one that applies by double clicking the grey boxes.)		
<input checked="" type="checkbox"/>	Reliability Authority	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 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 >1 year plan for the resource adequacy of its specific loads within a Planning Authority area.
<input type="checkbox"/>	Transmission Planner	Develops a >1 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.
<input checked="" 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 boxes for all that apply by double clicking the grey boxes.)	
<input checked="" type="checkbox"/>	1. Interconnected bulk electric 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 electric 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 electric 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 electric systems shall be developed, coordinated, maintained and implemented.
<input checked="" type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk electric systems.
<input checked="" type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk electric 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 electric 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? (Select 'yes' or 'no' from the drop-down box by double clicking the grey area.)	
1.	The planning and operation of bulk electric systems shall recognize that reliability is an essential requirement of a robust North American economy. Yes
2.	An Organization Standard shall not give any market participant an unfair competitive advantage. Yes
3.	An Organization Standard shall neither mandate nor prohibit any specific market structure. Yes
4.	An Organization Standard shall not preclude market solutions to achieving compliance with that Standard. Yes
5.	An Organization 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

Detailed Description (Provide enough detail so that an independent entity familiar with the industry could draft, modify, or withdraw a Standard based on this description.)

The proposed technical/preparedness standard will require or provide the following:

1. Each Balancing Authority shall collect and provide data [scan rate tie deviation and frequency for up to 5* minutes per event] needed to model its sub-minute Frequency Response to loss of large generating units and load.
2. Each Balancing Authority shall report each loss of generation or load greater than the respective Interconnection reporting threshold to its Reliability Coordinator.
3. Each Reliability Coordinator will relay Frequency Response Standard (FRS) event information to other Reliability Coordinators in its Interconnection. The Interconnection Time Monitor will maintain a log of FRS events.
4. NERC will annually post a list of FRS events. These events will be used by Balancing Authorities to calculate and report their annual Frequency Response and Bias.
5. NERC, in conjunction with the respective Regions, will establish a Target Frequency Response for each Interconnection. Absent an agreement, the observed Frequency Response in the first year of the FRS will be used as a target.
6. Balancing Authorities with less than [75%]* of their share of Target Frequency Response shall provide generation-level data to their Region for use by Transmission Planners and Planning Coordinators.
 - a. Each Generator Operator that operates a generator larger than [10 MW]*, shall provide data to its Balancing Authority, as required in item 6, to support this standard and for use in developing models of Frequency Response in the associated Interconnection.
 - b. Load Serving Entities shall provide data, as required in item 6, to their BA and Region to support the standard.

*These values are representative and will be refined based on stakeholder input during the standard drafting phase.

Related Standards

Standard No.	Explanation
BAL-001-0 through BAL-006-0	Balancing Standards, version 0
Balance Resources and Demand draft standards	Balancing Resources and Demand BAL-007 through BAL-012 draft standards, are in standards development process

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Related SARs

SAR ID	Explanation
Frequency Response SAR, version 0	Original Frequency Response SAR
MOD-027	Verification and Status of Generator Frequency Response. The proposed standard would provide a mechanism to validate compliance with MOD-027. The proposed standard could also provide a means to achieve MOD-027 (if the Balancing Authority implements on-line measurement of generator frequency using SCADA data).

Regional Variances

Region	Explanation
ECAR	
ERCOT	Single Balancing Authority Interconnections calculate Frequency Response based on the change in generation (or load) rather than Tie-Line deviation (ERCOT).
FRCC	
MAAC	
MAIN	
MAPP	
NPCC	
SERC	
SPP	
WECC	

Related NERC Operating Policies or Planning Standards

ID	Explanation
MOD-013-0	The proposed standard would enable better input data to the modeling standards.
