

Implementation Plan

Project 2007-11 Disturbance Monitoring

Requested Approvals

- PRC-002-2 Disturbance Monitoring and Reporting Requirements

Requested Retirements

- PRC-002-1 Define Regional Disturbance Monitoring and Reporting Requirements
- PRC-018-1 Disturbance Monitoring Equipment Installation and Data Reporting

Prerequisite Approvals

- None

Applicable Entities

- Planning Coordinator
- Reliability Coordinator
- Transmission Owner
- Generator Owner

Revisions to Defined Terms in the NERC Glossary

The standard drafting team proposes the following new definitions:	
Dynamic Disturbance Recording (DDR)	The recording of time sequenced data for dynamic power system characteristics such as power swings, frequency variations, and abnormal voltage problems.
Fault Recording (FR)	The recording of time sequenced waveform data for short circuits or failure of Elements resulting in abnormal voltage(s) and /or current(s).
Sequence of Events Recording (SOER)	The recording of time sequenced data for change in status of Elements, which may include protection and control devices.

Background

The Implementation Plan reflects consideration of the following:

1. This standard reflects the need for data, rather than equipment, with the understanding that the data is collected from Disturbance Monitoring Equipment distributed across the BES system.
2. A significant amount of sSequence of Events Recording (SER), fFault rRecording (FR), and dDynamic dDisturbance rRecording (DDR) equipment already exists on the BES. The monitoring location requirements in this standard align with industry practices ~~for locating this equipment~~. Therefore, many existing recordings can satisfy the Requirements and Implementation Plan put forth.
3. Fault MVA data is readily available or calculable by the Transmission Owners for the BES buses locations they own. Therefore, six (6) months is adequate time for generating the list of BES bus locations following the methodology described in Attachment 1 (Requirement R1).
4. Responsible Entities have the relevant data and information pertaining to the BES Elements requiring DDRdynamic Disturbance Recording and six (6) months is adequate time for working with any affected Entities and generating the list of BES Elements.
5. The nine (9) month time period for R2, R7, and R124 includes the six (6) month implementation for R1, and R56 (refer to 3, and 4 preceding), and a three (3) month additional time period to make notifications. The nine (9) months for R124 implementation is reasonable for the contents of that requirement. All requirements pertaining to possible implementation of equipment are referenced to notification of the list of bus locations or Elements to account for any delays in the process of location and Element selection.
6. A total percentage (%) of BES buses locations and BES Elements established in Requirements R1 and R56 respectively, are used in the Implementation Plan since these lists are explicitly created and readily available. It is expected that many locations will become compliant with incremental changes to recording.
7. A graduated approach to implementation recognizes that progress will be made while attempting to minimize any potential significant impact to the Entities. The timelines put forth allow for inertial delays in implementing new equipment or technologies (e.g. developing new standards and processes, testing and energization, and project management).
8. Implementation of disturbance monitoring following changes to the system are addressed by referencing the Implementation Plan to the time of notification following reassessment. Changes to disturbance monitoring are only required for identified bus locations or Elements following reassessment of the lists as per Requirement R1, Part 1.2 and Requirement R56, Part 6.2.

9. Implementing SOER, FR, and DDR may require scheduled outages for both Transmission Owners and Generator Owners. Generator Owners may have outage cycles of 24 months or more depending on the type and characteristics of the generating units or plant. Meanwhile, Transmission Owners will have more Elements requiring SOER, FR, and DDR and may have to schedule outages across the system. The Implementation Plan takes this into account for scheduling outages.
10. An Entity owning only one (1) identified bus location, Element, or generating unit is allowed four (4) years for implementation to accommodate normal outage schedules.
11. The Implementation Plan accounts for any increase in requests to vendors for this technology or equipment that could impact implementation timelines for the respective Entities.

General Considerations

Each Transmission Owner and Generator Owner shall maintain the ability to provide Disturbance Monitoring data using current methods until the entity meets the requirements of PRC-002-2 in accordance with this Implementation plan. As required in PRC-018-1 Disturbance Monitoring Equipment Installed and Data Reporting, Requirement R1, Parts 1.1 and 1.2, it is expected that the Transmission Owner and Generator Owner will have those functionalities in regards to their current Disturbance Data.

Effective Date

The standard shall become effective on the first day of the first calendar quarter six (6) months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter six (6) months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.

Standard(s) for Retirement

PRC-002-1 Midnight of the day immediately prior to the Effective Date of PRC-002-2 in the particular jurisdiction in which the new standard is becoming effective.

Each Transmission Owner, and Generator Owner shall maintain documentation to demonstrate compliance with PRC-018-1 until that entity meets the requirements of PRC-002-2 in accordance with this Implementation Plan. Standard PRC-018-1 shall remain effective throughout the phased implementation period of PRC-002-2 and shall be applicable to an entity's Disturbance Monitoring and Reporting activities not yet transitioned to PRC-002-2. PRC-018-1 will be retired following full implementation of PRC-002-2 as noted below.

PRC-018-1 Midnight of the day immediately prior to six (6) years after the Effective Date of PRC-002-2 in the particular jurisdiction in which the new standard is becoming effective.

~~Implementation Plan for Definitions~~

~~Entities shall use these definitions when implementing any requirement in this standard that references one of the definitions.~~

Implementation Plan for PRC-002-2 Requirements R1 and R56:

Entities shall be 100% compliant on the first day of the first calendar quarter six (6) months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is six (6) months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.

Implementation Plan for PRC-002-2 Requirements ~~R2, R7, and R124:~~

Entities shall be 100% compliant on the first day of the first calendar quarter nine (9) months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is nine (9) -months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.

Implementation Plan for PRC-002-2 Requirements R2, R3, R4, R5, R68, R79, R810, R911, R1012 and R113:

Entities shall be at least 50% compliant within four (4) years of the Effective Date of PRC-002-2 and fully compliant within six (6) years of the Effective Date.

Entities that own only one (1) identified BES bus, BES Element, or generating unit shall be fully compliant within six (6) years of the Effective Date.

~~Entities shall be compliant with the initial list of BES bus locations in Requirement R1 and list of Elements in Requirement R6 within the following:~~

- ~~● Following governmental authority or as otherwise provided for in jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect,~~
 - ~~○ At least 25% compliant within two (2) years following notification of the list~~
 - ~~○ At least 50% compliant within three (3) years following notification of the list~~

- ~~○ 100% compliant within four (4) years following notification of the list~~
- ~~○ **Note:** Entities that own only one (1) identified BES bus location, Element, or generating unit shall be 100% compliant within four (4) years following notification of the list.~~
- ~~Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter that is forty eight (48) months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction,~~

Entities shall be 100% compliant with a reassessed list from Requirement R1, ~~Part 1.2~~ or R56, ~~Part 56.2~~ within three (3) years following notification of the list.

Conforming Changes to Other Standards

Where conflicts between the continent-wide standard PRC-002-2 and a regional standard exist, entities should comply with PRC-002-2. Conflicts will be addressed in the regional standards development process.

- The following conflicts PRC-002-2 Requirement R3 stipulates data must be captured by fault recording to determine electrical quantities. PRC-002-NPCC-01 Requirement R3 stipulates the recording of those quantities.
- PRC-002-2 Requirement R5 stipulates the capture of dynamic disturbance recording data for HVDC. PRC-002-NPCC-01 does specify HVDC.

PRC-002-2 Requirement R8 recognizes dynamic disturbance recording that is not continuous. PRC-002-NPCC-01 addresses dynamic disturbance recorders installed after the standard was approved have to be continuous.

Implementation Plan Summary											
Requirement	Entity	Identify bus locations/ Elements	Notification	SOE	FR	DDR	Time Sync	5-Year Assessment	Other	Percent Compliant	Following compliance instructions noted for each requirement above:
R1	TO	X	X	X	X			X		100	Six (6) months
R2	TO		X							100	Nine (9) months
R23	TO/GO			X						25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R34	TO/GO				X					25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R45	TO/GO				X					25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R56	RE (PC or RC)	X	X			X		X		100	Six (6) months
R7	RE (PC or RC)		X							100	Nine (9) months
R68	RE (PC or RC) <u>IO</u>					X				25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R79	<u>IO</u>					X				25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R810	<u>IO/GO</u>					X				25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R911	TO/GO					X				25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R102	TO/GO						X			25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R113	TO/GO								X	25	Two (2) years
										50	Three (3) years
										100	Four (4) years
R124	TO/GO								X	100	Nine (9) months