

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Standard’s Introduction Sections of BOT Approved PRC-002-1 to Proposed PRC-002-2		
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2
2. Number: PRC-002-1	Proposed standard will replace both PRC-002-1 and PRC-018-1	2. Number: PRC-002-2
1. Title: Define Regional Disturbance Monitoring and Reporting Requirements	Regional applicability is eliminated and functional entity responsibility is defined	1. Title: Disturbance Monitoring and Reporting Requirements
3. Purpose: Ensure that Regional Reliability Organizations establish requirements for installation of Disturbance Monitoring Equipment (DME) and reporting of Disturbance data to facilitate analyses of events and verify system models.	Regional applicability is eliminated and functional entity responsibility is defined. In addition, proposed requirements now emphasize “function” and not the equipment.	3. Purpose: To ensure that Facility owners collect the data needed to facilitate analyses of Disturbances on the Bulk Electric System (BES).
4. Applicability 4.1. Regional Reliability Organization.	Regional applicability is eliminated and functional entity responsibility is defined.	4. Applicability: 4.1 Transmission Owners with Substations having Facilities rated at 200 kV or above 4.2 Generator Owners with any one of the following and connected to the transmission system at 200 kV or above: <ul style="list-style-type: none"> • Generating plants having a single generating unit of 500 MVA or higher nameplate rating • Generating plants with an aggregate plant total nameplate capacity of 1500 MVA or higher

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Requirements Specific to Sequence of Events from BOT Approved PRC-002-1 to Proposed PRC-002-2												
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2										
<p>R1: The Regional Reliability Organization shall establish the following installation requirements for sequence of event recording:</p> <p>R1.1: Location, monitoring and recording requirements, including the following:</p> <p>R1.1.1: Criteria for equipment location (e.g., by voltage, geographic area, station size, etc.).</p>	<p>Regional applicability for sequence of event recording inferred in current R1 is eliminated and functional entity responsibility is defined in proposed R1, R2 & R3.</p> <p>In addition proposed requirements now emphasize “function” as stated in proposed R1, R2 & R3, not the equipment as stated in current R1.</p> <p>Current R1.1 recording requirements are covered by proposed R1, R2 & R3. (location & monitoring are covered in current sub-requirements)</p> <p>Location criteria stated in current R1.1.1 are covered as part of proposed R1 text & R2 in proposed table 2-1 under the “Location” heading.</p>	<p>R1. Each Transmission Owner shall record (or have a process in place to derive) the Sequence of Events data for changes in circuit breaker position (open/close) for each of its circuit breakers operated at 200 kV and above at each Substation that meets the following criteria:</p> <p>R1.1. Contains any combination of three or more transmission lines operated at 200 kV or above and transformers having primary and secondary voltage ratings of 200 kV or above.</p> <p>R1.2. Connected at 200 kV or above through generating unit step up transformer(s) (GSU(s)) to a generating plant having either a single generating unit of 500 MVA or higher nameplate rating, or through a GSU(s) to a generating plant with an aggregate plant total nameplate capacity of 1500 MVA or higher.</p> <p>R2. Each Generator Owner shall record (or have a process in place to derive) the Sequence of Events data for changes in circuit breaker position (open/close) for its equipment identified in Table 2-1:</p> <table border="1"> <thead> <tr> <th colspan="2">Table 2-1: Generator Owner’s Requirement R2 for Sequence of Events Data</th> </tr> <tr> <th>Location</th> <th>Equipment</th> </tr> </thead> <tbody> <tr> <td>Each generating plant having either a single generating unit with a nameplate rating of 500 MVA or higher, and connected to the transmission system at 200 kV and above</td> <td>Each generator output circuit breaker, including low side breakers</td> </tr> <tr> <td>Each generating plant with an aggregate plant total nameplate capacity of 1500 MVA or higher, and connected to the transmission system at 200 kV and above</td> <td>Each generator output circuit breaker, including low side breakers</td> </tr> <tr> <td>Each Substation connected at 200 kV or</td> <td>Each circuit breaker 200 kV and</td> </tr> </tbody> </table>	Table 2-1: Generator Owner’s Requirement R2 for Sequence of Events Data		Location	Equipment	Each generating plant having either a single generating unit with a nameplate rating of 500 MVA or higher, and connected to the transmission system at 200 kV and above	Each generator output circuit breaker, including low side breakers	Each generating plant with an aggregate plant total nameplate capacity of 1500 MVA or higher, and connected to the transmission system at 200 kV and above	Each generator output circuit breaker, including low side breakers	Each Substation connected at 200 kV or	Each circuit breaker 200 kV and
Table 2-1: Generator Owner’s Requirement R2 for Sequence of Events Data												
Location	Equipment											
Each generating plant having either a single generating unit with a nameplate rating of 500 MVA or higher, and connected to the transmission system at 200 kV and above	Each generator output circuit breaker, including low side breakers											
Each generating plant with an aggregate plant total nameplate capacity of 1500 MVA or higher, and connected to the transmission system at 200 kV and above	Each generator output circuit breaker, including low side breakers											
Each Substation connected at 200 kV or	Each circuit breaker 200 kV and											

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Requirements Specific to Sequence of Events from BOT Approved PRC-002-1 to Proposed PRC-002-2			
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2	
R1.1.2: Devices to be monitored	Monitored devices stated in current R1.1.2 are covered as part of proposed R1 text & R2 in proposed table 2-1 under the heading "Equipment".	above through GSU(s) to a generating plant having a single generating unit with a nameplate rating of 500 MVA or higher	above
		Each Substation at 200 kV or above connected through GSU(s) to a generating plant with an aggregate plant total nameplate capacity of 1500 MVA or higher	Each circuit breaker 200 kV and above
		R3. Each Transmission Owner and Generator Owner shall record the time stamp (or have a process in place to derive the time stamp) to within four milliseconds of input received for the change in circuit breaker position (open/close) for each of its circuit breakers specified in Requirements R1 and R2.	

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Requirements Specific to Fault Recording from BOT Approved PRC-002-1 to Proposed PRC-002-2								
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2						
<p>R2. The Regional Reliability Organization shall establish the following installation requirements for fault recording:</p>	<p>Regional applicability for fault recording inferred in current R2 is eliminated and functional entity responsibility is defined in proposed R4, R5 & R6.</p> <p>In addition proposed requirements now emphasize “function” as stated in proposed R4, R5 & R6, not the equipment as stated in current R2.</p>	<p>R4. Each Transmission Owner shall record (or have a process in place to derive) the following Fault Recording data for its equipment identified in Table 4-1:</p> <p>R4.1. The three phase to neutral voltages on each monitored line or bus as follows:</p> <ul style="list-style-type: none"> • On ring buses, the voltages of bus sections connected to transmission lines • On breaker-and-a-half arrangements, the outer bus voltages, or the individual line voltages • On straight buses, common bus voltages or the individual line voltages <p>R4.2. The three phase currents and the residual or neutral currents of each monitored line and transformer.</p>						
<p>R2.1. Location, monitoring and recording requirements, including the following:</p>	<p>Current R2.1 details contained in sub-requirements R2.1.1, R2.1.2 & R2.1.3 are covered by proposed R4, R5 & R6 and associated sub-requirements.</p>	<table border="1"> <thead> <tr> <th colspan="2">Table 4-1: Transmission Owner’s Requirement R4 for Fault Recording Data</th> </tr> <tr> <th>Location</th> <th>Equipment</th> </tr> </thead> <tbody> <tr> <td> <p>Each Substation containing any combination of three (3) or more elements consisting of transmission lines operated at 200 kV or above and transformers having primary and secondary voltage ratings of 200 kV or above</p> <p>Each Substation connected at 200 kV or above through generating unit step up transformer(s) to a generating plant having a single generating unit of 500 MVA or higher nameplate rating</p> <p>Each Substation connected at 200</p> </td> <td> <ul style="list-style-type: none"> • Each transmission line operated at 200 kV or above that does not have fault data recorded at its remote terminal • Each transmission bus operated at 200 kV or above • Each transformer having low-side operating voltage of 200 kV or above </td> </tr> </tbody> </table>	Table 4-1: Transmission Owner’s Requirement R4 for Fault Recording Data		Location	Equipment	<p>Each Substation containing any combination of three (3) or more elements consisting of transmission lines operated at 200 kV or above and transformers having primary and secondary voltage ratings of 200 kV or above</p> <p>Each Substation connected at 200 kV or above through generating unit step up transformer(s) to a generating plant having a single generating unit of 500 MVA or higher nameplate rating</p> <p>Each Substation connected at 200</p>	<ul style="list-style-type: none"> • Each transmission line operated at 200 kV or above that does not have fault data recorded at its remote terminal • Each transmission bus operated at 200 kV or above • Each transformer having low-side operating voltage of 200 kV or above
Table 4-1: Transmission Owner’s Requirement R4 for Fault Recording Data								
Location	Equipment							
<p>Each Substation containing any combination of three (3) or more elements consisting of transmission lines operated at 200 kV or above and transformers having primary and secondary voltage ratings of 200 kV or above</p> <p>Each Substation connected at 200 kV or above through generating unit step up transformer(s) to a generating plant having a single generating unit of 500 MVA or higher nameplate rating</p> <p>Each Substation connected at 200</p>	<ul style="list-style-type: none"> • Each transmission line operated at 200 kV or above that does not have fault data recorded at its remote terminal • Each transmission bus operated at 200 kV or above • Each transformer having low-side operating voltage of 200 kV or above 							
<p>R2.1.1. Criteria for equipment location (e.g., by voltage, geographic area, station size, etc.).</p>	<p>Location criteria stated in current R2.1.1 is covered as part of proposed R4 & R5 in proposed Table 4-1 and 5-1 under the “Location” heading.</p>							

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Mapping of Requirements Specific to Fault Recording from BOT Approved PRC-002-1 to Proposed PRC-002-2			
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2	
<p>R2.1.2. Elements to be monitored at each location.</p> <p>R2.1.3. Electrical quantities to be recorded for each monitored element shall be sufficient to determine the following:</p> <p>R2.1.3.1. Three phase to neutral voltages.</p> <p>R2.1.3.2. Three phase currents and neutral currents.</p> <p>R2.1.3.3. Polarizing currents and voltages, if used.</p> <p>R2.1.3.4. Frequency.</p> <p>R2.1.3.5. Megawatts and megavars.</p>	<p>Monitored devices stated in current R2.1.2 is covered as part of proposed R4 & R5 in proposed Table 4-1 and 5-1 under the heading “Equipment”.</p> <p>Current R2.1.3 & sub-requirements R2.1.3.1 & R2.1.3.2 are duplicated as sub-requirements in proposed R4 & R5. Current sub-requirement R2.1.3.3 is not proposed because the quantity is not useful for fault analysis</p> <p>Current R2.1.3.4 & R2.1.3.5 are not being proposed since these quantities are not typically required for fault analysis and can be derived from the specified quantities of voltage and current if necessary for the analysis.</p>	<p>kV or above through generating unit step up transformer(s) to an aggregate plant with a total nameplate capacity of 1500 MVA or higher</p>	<p>R5. Each Generator Owner shall record (or have a process in place to derive) the following Fault Recording data for its equipment identified in Table 5-1:</p> <p>R5.1. The three phase to neutral voltages or phase to phase voltages on Generator Step-up Transformers (GSU(s)) from the high voltage side or low voltage side of the GSU, or from the generator bus.</p> <p>R5.2. The three phase currents of GSU(s) from the high voltage side or low voltage side of the GSU, or from the generator bus</p> <p>R5.3. The neutral current of wye connected GSU(s) high voltage windings.</p> <p>R5.4. The three phase to neutral voltages on each monitored line or bus as follows:</p> <ul style="list-style-type: none"> • On ring buses, the voltages of bus sections connected to transmission lines • On breaker-and-a-half arrangements, the outer bus voltages, or the individual line voltages • On straight buses, common bus voltages or the individual line voltages <p>R5.5. The three phase currents and the residual or neutral currents of each monitored line and transformer.</p>

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Requirements Specific to Fault Recording from BOT Approved PRC-002-1 to Proposed PRC-002-2			
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2	
		Table 5-1: Generator Owner's Requirement R5 for Fault Recording Data	
		Location	Equipment
		Each generating plant having either a single generating unit with a nameplate rating of 500 MVA or higher, and connected to the transmission system at 200 kV and above Each generating plant with an aggregate plant total nameplate capacity of 1500 MVA or higher, and connected to the transmission system at 200 kV and above	Each GSU with a high side of 200 kV and above
		Each Substation connected at 200 kV or above through GSU(s) to a generating plant having a single generating unit with a nameplate rating of 500 MVA or higher Each Substation at 200 kV or above connected through GSU(s) to a generating plant with an aggregate plant total nameplate capacity of 1500 MVA or higher	<ul style="list-style-type: none"> • Each transmission line operated at 200 kV or above that does not have fault data recorded at its remote terminal • Each bus operated at 200 kV or above • Each transformer having low-side operating voltage of 200 kV or above
<p>R2.2. Technical requirements, including the following:</p> <p>R2.2.1. Recording duration requirements.</p> <p>R2.2.2. Minimum sampling</p>	<p>Current R2.2, R2.2.1 & R2.2.2 are defined in the sub-requirements as part of proposed R6.</p>	<p>R6. Each Transmission Owner and Generator Owner shall have Fault Recording data for its equipment identified in Requirements R4 and R5 that conforms to the following:</p>	

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Mapping of Requirements Specific to Fault Recording from BOT Approved PRC-002-1 to Proposed PRC-002-2		
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<p>rate of 16 samples per cycle.</p> <p>R2.2.3. Event triggering requirements</p>	<p>Current R2.2.3, trigger requirements, are not proposed due to the absence of industry-wide practices and the variations of established practices in different regions and locations. Therefore, it is not appropriate to define continental requirements and force those requirements on various regions or companies.</p>	<p>R6.1. A single record or multiple records that include the following:</p> <ul style="list-style-type: none"> • A pre trigger record length of at least two cycles and a post trigger record length of at least 50 cycles <p align="center">OR</p> <ul style="list-style-type: none"> • At least two cycles of the pre trigger event; the first three cycles of an event; and the final cycle of an event <p>R.6.2 A minimum recording rate of 16 samples per cycle.</p>

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Mapping of Requirements Specific to Dynamic Disturbance Recording from BOT Approved PRC-002-1 to Proposed PRC-002-2		
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2
<p>R3. The Regional Reliability Organization shall establish the following installation requirements for dynamic Disturbance recording:</p> <p>R3.1. Location, monitoring and recording requirements including the following:</p> <p>R3.1.1. Criteria for equipment location giving consideration to the following:</p> <ul style="list-style-type: none"> - Site(s) in or near major load centers - Site(s) in or near major generation clusters 	<p>Regional applicability for dynamic Disturbance recording inferred in current R3 is eliminated and functional entity responsibility is defined in proposed R7, R8, R9, R10, & R11.</p> <p>In addition proposed requirements now emphasize ‘function’ as stated in proposed R7, R8, R9, R10, & R11 not the equipment as stated in current R3.</p> <p>Current R3.1 details contained in sub-requirements R3.1.1, R3.1.2 & R3.1.3 are covered by proposed R7, R8, R9, R10, & R11 and associated sub-requirements.</p> <p>Location criteria stated in current R3.1.1 is covered as part of proposed R7 & R8 text. Specific measureable</p>	<p>R7. Unless a Transmission Owner has Dynamic Disturbance Recording (DDR) data meeting all of the requirements of R7.1, R7.2, R7.3, and R7.4 recorded no further than two Substations away, then for each Substation having a total of seven or more transmission lines connected at 200 kV or above, the Transmission Owner shall record (or have a process in place to derive) the following DDR data:</p> <p>R7.1. At least one phase-to-neutral voltage at each voltage level of 200 kV and above</p> <p>R7.2. Frequency (at least one at the required Substation)</p> <p>R7.3. At least one phase current (on the same phase and at the same voltage as the voltage monitored in R7.1 above) (for each line operated at 200 kV and above)</p> <p>R7.4. Power and Reactive Power (MW and MVAR) flows expressed on a three-phase basis (for each line operated at 200 kV and above)</p> <p>R8. Each Generator Owner shall record (or have a process in place to derive) the following DDR data at each of its generating plants with an aggregate nameplate rating of 1500 MVA or higher for each GSU that has a transformer high side connected at 200 kV or above:</p> <p>R8.1. At least one phase-to-neutral voltage or one phase-to-phase voltage at either the GSU’s high side or low side voltage level, or the generator bus voltage.</p> <p>R8.2. Frequency (at least one at the required Substation)</p> <p>R8.3. At least one phase current (on the same phase and at the same voltage as the voltage monitored in R8.1 above) or two phase currents for phase-to-phase voltages for each GSU.</p> <p>R8.4. Power and Reactive Power (MW and MVAR) flows expressed on a three-phase basis (per each monitored element) for each GSU.</p>

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Requirements Specific to Dynamic Disturbance Recording from BOT Approved PRC-002-1 to Proposed PRC-002-2		
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2
<ul style="list-style-type: none"> - Site(s) in or near major voltage sensitive areas - Site(s) on both sides of major transmission interfaces - A major transmission junction - Elements associated with Interconnection Reliability Operating Limits - Major EHV interconnections between control areas - Coordination with neighboring regions within the interconnection <p>R3.1.2. Elements and number of phases to be monitored at each location.</p> <p>R3.1.3. Electrical quantities to be recorded for each monitored element shall be sufficient to determine the following:</p>	<p>locations are stated.</p> <p>Monitored devices stated in current R3.1.2 are covered as part of proposed R7 & R8 text. Number of phases to be monitored is not proposed however monitoring must be sufficient to derive required data.</p> <p>Current R3.1.3 & sub-requirements R3.1.3.1 & R2.1.3.3 are specified as sub-requirements in proposed R7</p>	

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Requirements Specific to Dynamic Disturbance Recording from BOT Approved PRC-002-1 to Proposed PRC-002-2		
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<p>R3.1.3.1. Voltage, current and frequency.</p> <p>R3.1.3.2. Megawatts and megavars.</p> <p>R3.2. Technical requirements, including the following:</p> <p>R3.2.1. Capability for continuous recording for devices installed after January 1, 2009.</p> <p>R3.2.2. Each device shall sample data at a rate of at least 960 samples per second and shall record the RMS value of electrical quantities at a rate of at least 6 records per second.</p>	<p>& R8.</p> <p>Current R3.2, R3.2.1 & R3.2.2 are defined along with additional requirements in the sub-requirements as part of proposed R9.</p>	<p>R9. Each Transmission Owner and Generator Owner that has DDR devices (to meet Requirement R7 or R8) shall manage its DDR data in accordance with the following technical specifications:</p> <p>R9.1. Use the same phase for voltage and current recordings.</p> <p>R9.2. Collect at least 960 samples per second to calculate RMS electrical quantities.</p> <p>R9.3. Store calculated RMS values of electrical quantities at a rate of at least 6 times per second.</p> <p>R10. Each Transmission Owner and Generator Owner that installs a DDR device after January 1, 2011 to meet Requirements R7, R8 and R9 shall install a device that is capable of continuous recording.</p> <p>R11. Each Transmission Owner and Generator Owner that has DDR devices (to meet Requirements R7, R8 and R9) that do not have continuous recording capability shall set its devices to trigger and record according to the following:</p> <p>R11.1. For rate-of-change of frequency.</p> <p>R11.2. For oscillation triggers, set to trigger for low frequency oscillations in 0.1 to 4 Hz range.</p> <p>R11.3. Set data record lengths at a minimum of three minutes.</p>

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Mapping of Other Disturbance Monitoring Requirements from BOT Approved PRC-002-1 to Proposed PRC-002-2		
Standard PRC-002-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2
<p>R4. The Regional Reliability Organization shall establish requirements for facility owners to report Disturbance data recorded by their DME installations. The Disturbance data reporting requirements shall include the following:</p> <p>R4.1. Criteria for events that require the collection of data from DMEs.</p> <p>R4.2. List of entities that must be provided with recorded Disturbance data.</p> <p>R4.3. Timetable for response to data request.</p> <p>R4.4. Provision for reporting Disturbance data in a format which is capable of being viewed, read and analyzed with a generic COMTRADE1 analysis tool.</p> <p>R4.5. Naming of data files in conformance with the IEEE C37.232 Recommended Practice for Naming</p>	<p>Regional applicability for Disturbance data reporting inferred in current R4 is eliminated and functional entity responsibility is defined in proposed R12 &, R13 & compliance section D paragraphs 1.3.1, 1.3.2 & 1.5.1</p> <p>Current R4.1 is proposed to be replaced by proposed compliance section D paragraphs 1.5.1 and 1st bullet under 1.5.1.</p> <p>Current R4.2 & R4.3 are covered by the proposed compliance section D paragraphs 1.5.1 and 1st bullet under 1.5.1.</p> <p>Current R4.4 is covered by the proposed compliance section D, 2nd bullet under 1.5.1.</p> <p>Current R4.5 is covered by the proposed compliance section D, 4th bullet under 1.5.1.</p>	<p>R12. <i>MAPPED TO PRC-018-1 Requirement R1 – See below.</i></p> <p>R13. <i>MAPPED TO PRC-018-1 Requirement R1.2 – See below.</i></p> <p>Compliance Section D</p> <p>1.5. Additional Compliance Information</p> <p>1.5.1 Each Transmission Owner and Generator Owner shall meet all of the following criteria when reporting Sequence of Event, Fault Recording , and Dynamic Disturbance Recording data to the Regional Entity or the Reliability Coordinator or NERC:</p> <ul style="list-style-type: none"> • All Sequence of Event, Fault Recording, and Dynamic Disturbance Recording data shall be provided to the Regional Entity, Reliability Coordinator, or NERC within 30 calendar days of a request, • All Fault Recording and Dynamic Disturbance Recording data shall be in a format such that any software system capable of viewing and analyzing COMTRADE (IEEE Std. C37.111-1999 or successor) files may be used to process and evaluate the data, • All known delays in interposing relays shall be reported along with the SOE data, • All data files shall be named in conformance with IEEE C37.232-2007, or its successor, Recommended Practice for Naming Time Sequence Data Files.

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<p>Time Sequence Data Files².</p> <p>R4.6. Data content requirements and guidelines.</p>	<p>Current R4.6 is covered by the proposed compliance section D, 3rd bullet under 1.5.1.</p>	
<p>R5. The Regional reliability Organization shall provide its requirements (and any revisions to those requirements) including those for DME installation and Disturbance data reporting of the affected Transmission Owners and Generator Owners within 30 calendar days of approval of those requirements.</p>	<p>Since regional applicability is eliminated and functional entity responsibility is defined this existing requirement has been removed.</p>	
<p>R6. The Regional Reliability Organization shall periodically (at least every five years) review, update and approve its Regional requirements for Disturbance monitoring and reporting.</p>	<p>Since regional applicability is eliminated and functional entity responsibility is defined this existing requirement has been removed.</p>	
		<p>Compliance section D paragraphs 1.3.1 and 1.3.2 MAPPED TO PRC-018-1 BELOW</p>

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2. Number: PRC-018-1	Proposed standard will replace both PRC-002-1 and PRC-018-1	2. Number: PRC-002-2
1. Title: Disturbance Monitoring Equipment Installation and Data Reporting	Proposed requirements now emphasize "function" and data capture or derivation and not equipment.	1. Title: Disturbance Monitoring and Reporting Requirements
3. Purpose: Ensure that Disturbance Monitoring Equipment (DME) is installed and that Disturbance data is reported in accordance with regional requirements to facilitate analyses of events.	The proposed requirements now emphasize "function" and not the equipment. In addition, regional applicability is eliminated.	3. Purpose: To ensure that Facility owners collect the data needed to facilitate analyses of Disturbances on the Bulk Electric System (BES).
4. Applicability: 4.1. Transmission Owners 4.2. Generator Owners	Further defined the applicability.	4. Applicability: 4.1 Transmission Owners with Substations having Facilities rated at 200 kV or above 4.2 Generator Owners with any one of the following and connected to the transmission system at 200 kV or above: <ul style="list-style-type: none"> • Generating plants having a single generating unit of 500 MVA or higher nameplate rating • Generating plants with an aggregate plant total nameplate capacity of 1500 MVA or higher

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<p>R1. Each Transmission Owner and Generator Owner required to install DMEs by its Regional Reliability Organization (reliability standard PRC-002 Requirements 1-3) shall have DMEs installed that meet the following requirements:</p> <p>R1.1. Internal Clocks in DME devices shall be synchronized to within 2 milliseconds or less of Universal Coordinated Time scale (UTC)</p> <p>R1.2. Recorded data from each Disturbance shall be retrievable for ten calendar days.</p>	<p>Regional applicability is eliminated and functional entity responsibility is defined within proposed requirements.</p> <p>Current R1.1 is covered by proposed R10.</p> <p>Current R1.2 is covered by proposed R11.</p> <p>SEE MAPPING TO CURRENT R5 BELOW</p>	<p>R1 through R11. MAPPED TO PRC-002-1 ABOVE</p> <p>R12. Each Transmission Owner and Generator Owner shall synchronize all of its Sequence of Event, Fault Recording, and DDR functions to within +/- 2 milliseconds of Universal Coordinated Time (UTC) with the associated hour offset.</p> <p>R13. Each Transmission Owner and Generator Owner shall have all recorded Sequence of Event, Fault Recording, and DDR data available (locally or remotely) for 10 calendar days after a Disturbance.</p> <p>COMPLIANCE SECTION D PARAGRAPH 1.5 MAPPED TO PRC-002-1 ABOVE</p>

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Standard's Requirements from BOT Approved PRC-018-1 to Proposed PRC-002-2		
Standard PRC-018-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2
<p>R2. The Transmission Owner and Generator Owner shall each install DMEs in accordance with its Regional Reliability Organization's installation requirements (reliability standard PRC-002 Requirements 1 through 3).</p>	<p>Regional applicability is eliminated and functional entity responsibility is defined within proposed requirements.</p>	<p>GENERALLY MAPPED TO ALL PROPOSED REQUIREMENTS</p>
<p>R3. The Transmission Owner and Generator Owner shall each maintain, and report to its Regional Reliability Organization on request, the following data on the DMEs installed to meet that region's installation requirements (reliability standard PRC-002 Requirements 1.1, 2.1 and 3.1):</p> <p>R3.1. Type of DME (sequence of event recorder, fault recorder, or dynamic disturbance recorder).</p> <p>R3.2. Make and model of equipment.</p> <p>R3.3. Installation location.</p> <p>R3.4. Operational status.</p> <p>R3.5. Date last tested.</p> <p>R3.6. Monitored elements, such as transmission circuit, bus section, etc.</p>	<p>Regional applicability is eliminated and functional entity responsibility is defined within proposed compliance section D paragraph 1.3.2.</p> <p>Current R3.1, R3.2 & R3.3 are covered by compliance section D, 1st, 2nd, and 3rd bullets under 1.3.2.</p> <p>Current R3.4 & R3.5 were not proposed due to changing status and lack of value added for analysis.</p> <p>Current R3.6 is covered by compliance section D, 4th bullet under 1.3.2.</p>	<p>Compliance Section D</p> <p>1.3. Data Retention</p> <p>1.3.2 Each Transmission Owner and Generator Owner shall each maintain, and report to the Regional Entity, Reliability Coordinator or NERC within 30 calendar days of a request, the following information for Sequence of Event, Fault Recording, and Dynamic Disturbance Recording data:</p> <ul style="list-style-type: none"> • Location • Make and model of equipment • Type of data source (Sequence of Events, Fault Recording, or Dynamic Disturbance Recording). • Monitored elements, such as transmission circuit, bus section, circuit breakers, etc.

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Standard's Requirements from BOT Approved PRC-018-1 to Proposed PRC-002-2		
Standard PRC-018-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2
<p>R3.7. Monitored devices, such as circuit breaker, disconnect status, alarms, etc.</p> <p>R3.8. Monitored electrical quantities, such as voltage, current, etc.</p>	<p>Current R3.7 & R3.8 are already proposed as requirements making such a database unnecessary.</p>	
<p>R4. The Transmission Owner and Generator Owner shall each provide Disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements (reliability standard PRC-002 Requirement 4).</p>	<p>Regional applicability is eliminated and functional entity responsibility is defined within proposed requirements.</p>	<p>GENERALLY MAPPED TO ALL PROPOSED REQUIREMENTS</p>
<p>R5. The Transmission Owner and Generator Owner shall each archive all data recorded by DMEs for Regional Reliability Organization-identified events for at least three years.</p>	<p>Current R5 is covered by proposed compliance section D paragraph 1.3.1.</p>	<p>Compliance Section D</p> <p>1.3. Data Retention</p> <p>1.3.1 Each Transmission Owner and Generator Owner shall retain all data provided to the Regional Entity, Reliability Coordinator or NERC for at least three years following the event.</p>

PRC-002-1 and PRC-018-1 Mapping to Proposed NERC Reliability Standard PRC-002-02

Mapping of Standard's Requirements from BOT Approved PRC-018-1 to Proposed PRC-002-2		
Standard PRC-018-1 NERC Board Approved	Comment	Proposed Standard PRC-002-2
<p>R6. Each Transmission Owner and Generator Owner that is required by its Regional Reliability Organization to have DMEs shall have a maintenance and testing program for those DMEs that includes:</p> <ul style="list-style-type: none"> R6.1. Maintenance and testing intervals and their basis. R6.2. Summary of maintenance and testing procedures. 	<p>Current R6 & sub-requirements are proposed to be transferred to Project 2007-17 Protection System Maintenance and Testing</p>	