

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Project 2007-06.2

Phase 2 of System Protection Coordination

Background Presentation for Q & A Sessions

March 24 and April 5, 2016

RELIABILITY | ACCOUNTABILITY



- Speakers
 - Standard drafting team
 - Chair, Mark Peterson, Great River Energy
 - Scott Watts, Duke Energy Carolinas
 - NERC
 - Scott Barfield-McGinnis, Senior Standards Developer
- Project Background
- Discussion
- Q & A Sessions to be held:
 - March 24, 2016, and
 - April 5, 2016

- **Revise PRC-001-1.1(ii), Requirement R1, R2, R5, & R6**
 - Address Federal Energy Regulatory Commission directives
 - Determine the amount of time after a relay failure
 - Clarify the term “Corrective Action”
 - Correct references to Measures and Levels of Non-Compliance
 - Determine timeframe for corrective actions after equipment failures, for notifications, and consider the “maximum time” for corrective actions
- **Consider System Protection & Control Task Force recommendations**
 - Consider applicable entities are appropriate
 - E.g., NERC Functional Model
 - Eliminate ambiguous term and duplicative requirements
 - Improve measurability



Discussion

- R1 – familiar with the purpose and limitations of Protection System schemes
 - Generator Operator (GOP) moves to new PER-006-1
 - Balancing Authority (BA) is explained in the Mapping Document
 - Transmission Operator (TOP) addressed by definition revisions
- R2 – notification of relay and equipment failures and corrective actions as soon as possible
 - Explained in Mapping Document
- R5 – notification of system changes “in advance” that impact protection
 - Explained in Mapping Document
- R6 – monitoring and notification of Special Protection Systems
 - Explained in Mapping Document

- “Familiar with”
 - PER-003-1 (Operating Personnel Credentials)
 - PER-005-2 (System Personnel Training)
- “Purpose and limits”
 - Operations Planning Analysis (OPA): An evaluation of projected system conditions to assess anticipated (pre-Contingency) and potential (post-Contingency) conditions for next-day operations. The evaluation shall reflect applicable inputs including, but not limited to, load forecasts; generation output levels; Interchange; known Protection System and **Remedial Action Scheme** status or degradation, **functions, and limits**; Transmission outages; generator outages; Facility Ratings; and identified phase angle and equipment limitations. (Operational Planning Analysis may be provided through internal systems or through third-party services.)

- “Familiar with”
 - PER-003-1 (Operating Personnel Credentials)
 - PER-005-2 (System Personnel Training)
- “Purpose and limits”
 - Real-time Assessment (RTA): An evaluation of system conditions using Real-time data to assess existing (pre-Contingency) and potential (post-Contingency) operating conditions. The assessment shall reflect applicable inputs including, but not limited to: load; generation output levels; known Protection System and **Remedial Action Scheme** status or degradation, **functions, and limits**; Transmission outages; generator outages; Interchange; Facility Ratings; and identified phase angle and equipment limitations. (Real-time Assessment may be provided through internal systems or through third-party services.)

- Propose PER-006-1 – Specific Training for Personnel
- Applicable to GOP that have:
 - **4.1.1.1** Plant personnel who are responsible for the Real-time control of a generator and receive Operating Instruction(s) from the Generator Operator’s Reliability Coordinator, Balancing Authority, Transmission Operator, or centrally located dispatch center.
 - This does not include personnel at a centrally located dispatch center
- Avoids conflict with PER-005-2
 - Does include personnel at a centrally located dispatch center
 - Does not include plant personnel

- **R1.** Each Generator Operator shall provide training to personnel identified in Applicability section 4.1.1.1. on the operational functionality of Protection Systems and Remedial Action Schemes (RAS) that affect the output of the generating Facility(ies) it operates. [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning*]
- **M1.** Each Generator Operator shall have available for inspection, evidence that the applicable personnel completed training. This evidence may be documents such as training records showing successful completion of training that includes training materials, the name of the person, and date of training.

- May include, but is not limited to the following:
 - Purpose of protective relays and RASs
 - Zones of protection
 - Protection communication systems (e.g., line current differential, direct transfer trip, etc.)
 - Voltage and current inputs
 - Station dc supply associated with protective functions
 - Resulting actions – Tripping/closing of breakers; tripping of a generator step-up (GSU) transformer; or generator ramping/tripping control functions

- The Generator Operator failed to provide training as described in Requirement R1 to the greater of:
 - Number of personnel at a single Facility, or
 - A percentage of the overall Generator Operator function
- Does not favor an entity based on size

- PER-006-1
 - Specific training by GOP
 - “Operational functionality” clarifies “familiar with purpose and limitation”
 - Measurable – training records
- Revised definitions
 - Require RC and TOP to integrate the functions and limits of Protection Systems and RASs into their OPA/RTA
 - Ensures operation within SOLs and IROLs
- Retirement of PRC-001-1.1(ii)
 - Requirement R1
 - Supported by PER-006-1 for GOP
 - Supported by PER-003-1 and PER-005-2 for BA
 - Supported by PER-003-1, PER-005-2, and OPA/RTA definitions for RC and TOP
 - Requirements R2, R5, and R6 supported by other standards

- Project posted
 - Formal 45-day comment period: March 10 – April 25, 2016
 - Initial ballots of PER-006-1, definitions, and non-binding poll of VRF/VSL
 - Draft RSAW within two weeks of posting
- Approval of this Phase 2 project with Phase 1 (PRC-027-1) allows the complete retirement of PRC-001-1.1(ii)
- Q & A Sessions
 - Thursday, March 24, 2016 from Noon-1:00 p.m. Eastern
 - Tuesday, April 5, 2016 from 3:00-4:00 p.m. Eastern
 - Send questions before the Q & A to Scott Barfield-McGinnis, Senior Standard Developer at Scott.Barfield@nerc.net or call 404-446-9689
- The sessions will be recorded and posted



Questions and Answers