

Project 2007-06.2

Phase 2 of System Protection Coordination
(Requirement revisions to PRC-001-1.1(ii))

Industry Webinar
July 14, 2015

RELIABILITY | ACCOUNTABILITY



Member	Entity
Mark Peterson, Chair	Great River Energy
Michael Cruz-Montes, Vice Chair	CenterPoint Energy Houston Electric, LLC
Po Bun Ear	Hydro-Québec TransÉnergie
Scott Hayes	Pacific Gas & Electric
Mark Kuras	PJM Interconnection, LLC
Sam Mannan	Los Angeles Dept. of Water and Power (LADWP)
Yubaraj Sharma	Luminant Generation Company, LLC
Rui Da Shu	Northeast Power Coordinating Council
Scott Watts	Duke Energy Carolinas

- Standard Drafting Team (SDT)
 - Mark Peterson, Chair
 - Michael Cruz-Montes, Vice Chair
- NERC staff
 - Scott Barfield-McGinnis, Standards Developer

- Administrative Items
 - Antitrust and Disclaimers
 - Objectives & Approach
 - Project Activity
- PRC-001 Mapping
 - Retirement of Requirements R2, R5, and R6
 - Where Requirement R1 is moving
 - Questions & Answers Session (via chat)
- Closing Remarks
 - Going Forward
 - Conclusion



Administrative Items

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition. It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment

- **Public Announcement**
 - Participants are reminded that this meeting is public. Notice of the meeting was widely distributed. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.
- **Presentation Material**
 - Wording in this presentation is used for presentation purposes and may not reflect the official posted drafts of requirements or other language
- **For the official record**
 - Webinar and chat comments are not a part of the official project record
 - Comments must be submitted via the project page during posting
 - The drafting team will consider any informal feedback

- Webinar is intended to
 - Communicate where reliability objectives are moving to
 - Communicate the revisions to requirements
 - Help SDT determine level of industry consensus to revisions
 - Obtain stakeholder feedback
- Informal Question and Answer (Q&A)
 - Multiple Q&A and polls will be held during webinar
 - Submit questions and comments via the chat feature
 - To help facilitate a productive webinar
 - Preface comments with “Comment:”
 - Preface questions with “Question:”
 - Some questions may require future team consideration

Acronym	Definition
BA	Balancing Authority
BES	Bulk Electric System
FERC	Federal Energy Regulatory Commission
GOP	Generator Operator
IRO	Interconnection Reliability Operations (standard family)
NERC	North American Electric Reliability Corporation
OER	Office of Electric Reliability (FERC)
OPA	Operational Planning Analysis
PC	Planning Coordinator (entity)
PER	Personnel (standard family)
PRC	Protection and Control (standard family)

Acronym	Definition
RAS	Remedial Action Scheme
RC	Reliability Coordinator (entity)
RTA	Real-time Assessment
RTM	Real-time monitoring
SDT	Standard Drafting Team
SPS	Special Protection System (being replaced by RAS)
TOP	Transmission Operator (entity)
TOP	Transmission Operation (standard family)
TP	Transmission Planning (entity)
VRF	Violation Risk Factor
VSL	Violation Severity Level

- Address Federal Energy Regulatory Commission directives
- Consider applicable entities are appropriate
 - E.g., NERC Functional Model
- Requirements
 - Meet the reliability objectives
 - Eliminate ambiguity and duplicity
 - Improve measurability
 - What family should reliability objectives be placed

- Started development in March 2015
- Held two webinars to communicate approach
 - Received informal feedback
 - Enhanced revisions
- Prepared to post in April 2015
 - Quality Review revealed concerns
 - Re-studied connection with recent TOP/IRO filings
- Developed an explanation how TOP/IRO standards address certain reliability objectives April and May 2015
- Met with FERC technical staff on June 16, 2015
- SDT met to finalize approach and revisions



PRC-001 Mapping

- There are six PRC-001 Requirements
 - Requirements R3 and R4 (Phase 1 – PRC-027-1)
 - Requirements R1, R2, R5, and R6 (Phase 2)
- PRC-001 presentation will be by requirement
 - R6 – monitoring and notification of SPS (expected to become RAS)
 - R5 – notification of system changes “in advance” that impact protection
 - R4 – being addressed by Phase 1 (i.e., proposed PRC-027-1)
 - R3 – being addressed by Phase 1 (i.e., proposed PRC-027-1)
 - R2 – notification of relay and equipment failures and corrective actions as soon as possible
 - R1 – knowledge of Protection Systems

- Full mapping will be explained when posted for comment
- Requirements proposed for retirement were identified as duplicative of other standards
- Language provided is paraphrased
- IRO and TOP standards referenced are NERC Board adopted, filed, and pending approval by FERC

- R6 is proposed for retirement
 - BA and TOP is required to monitor the status of each SPS (being replaced by RAS) and notify affected entities of each change in status
- SDT explains the reliability objective addressed by:
 - Addressed by TOP-001-3, R10 (Monitoring – TOP)
 - Addressed by TOP-001-3, R11 (Monitoring – BA)
 - Addressed by IRO-008-2, R4 (Monitoring – RC)
 - Real-time Assessment is done once every 30 minutes
 - Implied RC must be notified of RAS status to be able to perform RTA
 - Addressed by IRO-010-2, R1 (Notification – RC)
 - Addressed by TOP-003-3, R1 and R2 (Notification – BA & TOP)

- R5 is proposed for retirement
 - GOP and TOP are required to notify neighboring entities “in advance” of changes in generation, transmission, load, or operating conditions that could require changes in Protection Systems
- SDT explains the reliability objective addressed by:
 - TOP-002-4, R1 and R2 (in advance – BA and TOP)
 - IRO-008-2, R1 and R2 (in advance – RC)
 - IRO-017-1, R1, R2, R3, and R4 (in advance – RC)
 - TPL-001-4, R4 (in advance – PC and TP)

- Being processed by Project 2007-06 (i.e., Phase 1)
- Proposed PRC-027-1
 - Addresses R3 and R4 - coordination of Protection Systems during Faults
 - Will allow R3 and R4 to be retired from PRC-001

- R2 is proposed for retirement
 - GOP and TOP are required to notify entities of relay/equipment failures and take corrective action as soon as possible
- SDT explains the reliability objective is addressed by:
 - TOP-003-3, R1 and R2 (Notification – BA and TOP)
 - TOP-001-3, R1, R2, R13, and R14 (Corrective Action via Operating Instructions, i.e., as soon as possible – BA & TOP)
 - IRO-001-4, R1 (Corrective Action via Operating Instructions, i.e., as soon as possible – RC)
 - IRO-008-2, R4 (As soon as possible – RC)
 - IRO-010-2, R1 (Notification – RC)
- Achieves directive from Order No. 693, paragraph 1449 (#3)



Q&A on Retirement of R2, R5, & R6

- R1 is proposed to be moved
 - Entities must be familiar with the purpose and limitations of Protection System schemes applied in its area
- SDT held two previous webinars to obtain feedback
 - Should R1 go in a PER, PRC, or a TOP standard
- NERC staff and the SDT met with FERC OER staff on June 16, 2015 to discuss the development of the standard
 - SDT discussions with FERC OER staff communicated the reliability objective of R1 is intended to ensure operating entities know how Composite Protection Systems will respond to BES conditions and their effects on the operation of the BES
- SDT considered FERC OER staff and industry feedback and determined R1 is best suited for a new “TOP” Reliability Standard

- TOP-009-1 (*Knowledge of Composite Protection Systems and Remedial Action Schemes and Their Effects*)
- Purpose
 - To ensure operating entities have the requisite knowledge of Composite Protection Systems and Remedial Action Schemes (RAS), and their effects, in order to operate and maintain the reliability of the Bulk Electric System (BES)
- Applicability
 - Transmission Operator
 - Balancing Authority
 - Generator Operator
- Clarifies which Composite Protection Systems are important
- Addresses the operational functionality and effects

- Knowledge of Composite Protection System
 - May be demonstrated through training (including the effects on the BES), operating guides, manuals, procedures, output of operational tools (e.g., databases or analysis programs), or outcomes of analyses, monitoring, and assessments that identify the impacts on the BES
- NERC Glossary term “Composite Protection System”
 - “The total complement of Protection System(s) that function collectively to protect an Element. Backup protection provided by a different Element’s Protection System(s) is excluded.”
 - Individual Protection System functionality is not intended in TOP-009-1
- SDT determined that knowledge should also extend to “Remedial Action Scheme” (RAS)
 - Ensures full coverage

- Each TOP shall ensure its personnel responsible for Reliable Operation of its TOP Area have knowledge of operational functionality and effects of Composite Protection Systems and RAS that are necessary to perform its Operational Planning Analysis, Real-time monitoring, and Real-time Assessments
- Personnel must have knowledge of those protective systems that are used as inputs to its OPA, RTM, and RTA. For example:
 - Systems defined by TOP-003, R1 (i.e., operational data)
 - Systems logged into operational tools or using other methods
 - Systems that are in an abnormal or temporary state due to some issue

- Each BA shall ensure its personnel responsible for Reliable Operation of its BA Area have knowledge of operational functionality and effects of Composite Protection Systems and RAS that are necessary to perform its Real-time monitoring (RTM) in order to maintain generation-Load-Interchange balance
- Personnel must have knowledge of those protective systems that are used as inputs to its RTM. For example:
 - Systems defined by TOP-003, R2 (i.e., operational data)
 - Systems logged into operational tools or using other methods
 - Systems that are in an abnormal or temporary state due to some issue

- Each GOP shall ensure its personnel responsible for Reliable Operation of its generating Facilities have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes (RAS) that impact its generating Facilities.
- Personnel must have knowledge of those protective systems that impact its generating Facilities. For example:
 - RAS operation resulting in a generating unit trip or runback that effects the BES



Q&A on TOP-009-1



Closing Remarks

- Revise standard based on feedback and post:
 - Proposed TOP-009-1
 - Retirement of PRC-001 (in conjunction with PRC-027-1)
 - Mapping Document (details retirements)
 - Implementation Plan (aligns with PRC-027 for smooth transition)
 - VRF/VSL Justifications
- Anticipate initial formal posting
 - July 20, conduct a 45-day comment period and ballot
 - Hold a follow webinar(s)
- Respond to comments
 - Anticipated for second week in September 2015
 - Watch the NERC calendar at www.nerc.com for registration
 - See Program Areas, Standards, Calendar, View Standards Events

- Encourage working through forums or trades
 - To become aware of industry direction on topics
 - Develop consolidated comments informally or during postings
- NERC Standards Developer, Scott Barfield-McGinnis
 - Email at scott.barfield@nerc.net
 - Telephone: 404-446-9689
 - To receive **Project 2007-06.2** announcements and updates
 - Request to be added to **SPCP2SDT_Plus**
- Webinar slides and recording will be posted to www.nerc.com
 - Within three business days following webinar under “Standards” / “Webinars”
 - Link will be provided in the next “Standards Bulletin”
- Thank you for participating

Project 2007-06.2 Webinar has ended Thank you for participating

Email at scott.barfield@nerc.net

Telephone: 404-446-9689

*Request to be added to **SPCP2SDT_Plus***

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