PRC-002-NPCC-01
Disturbance Monitoring

NPCC Compliance and Standards Workshop
Nov. 10, 2010

Lee Pedowicz
Manager, Reliability Standards
Purpose

“Ensure that adequate disturbance data is available to facilitate Bulk Electric System event analyses.”
Background

- PRC-002 is a “Fill in the blank” standard
- NERC Project 2007-11 Disturbance Monitoring--revise NERC Standards PRC-002, PRC-018
- Each region to supplement PRC-002 with a Regional Standard
PRC-002-NPCC-01 addresses:

- Sequence of Events Recorders--criteria for installation
- Fault recorders on generating units--thresholds based on machine MVA
- Dynamic Disturbance Recorders--thresholds on a load basis and critical facilities locations
- Documentation requirements for DME settings, testing, and returning to service, etc.
Definitions needed for terms not found in the NERC Glossary.

More stringent than NERC PRC-002:
- Sequence of Event recording capability required determined by service to radial loads greater than 300MW, units with a Nameplate Capacity greater than 50MVA, and Generating Plants greater than 300MVA Nameplate Capacity
Locations for application of Fault Recording equipment

- Generating Plants greater than 200MVA capacity
- Shunt capacitors, shunt reactors
- Dynamic VAR devices
- HVDC terminals

Specifies Fault Recording equipment trigger settings

- Phase currents set at 1.5 p.u. or less of rated CT secondary current, protective relay tripping for all Protection Groups
Trigger settings for Fault Recorders (continued):

- Neutral overcurrent 0.2 p.u. or less of rated CT secondary current
- Monitored phase undervoltage set at 0.85 p.u. or greater
More stringent than NERC PRC-002 (continued):

- Specifies additional Dynamic Disturbance Recording equipment trigger settings, and location requirements for installation.
  - One DDR per 3,000MW of peak load
  - Consideration of major load centers, major generation clusters, etc.
More stringent than NERC PRC-002 (continued):

- Requires Reliability Coordinator involvement for Dynamic Disturbance Recording
- Data file and document requirements
  - View, read, and analyze with a COMTRADE analysis tool
Avoids the use of generalities.

Technical Bases
  Drafting Team Subject Matter Expert experience when collecting data from past events.
Implementation Plan

- Fifty percent compliance within two years of FERC and Canadian entities’ approvals
- Seventy-five percent compliance within three years of FERC and Canadian entities’ approvals
- One hundred percent compliance within four years of FERC and Canadian entities’ approvals
History

- Three postings for comments
  - Nov. 12, 2008 – Dec. 21, 2008
  - June 2, 2009 – July 15, 2009
  - Sept. 9, 2009 – Oct. 24, 2009

- Comments evaluated, and responded to by the DMSDT

- TFSP, and RCC endorsed the Standard and its Implementation Plan
RSC voted to post for Member approval
Posted for 30 Day Pre-Ballot Review Nov. 24, 2009
Notification of Ballot posted Dec. 2, 2009
Ballot period Dec. 17 thru Jan. 6, 2010
Approved by NPCC Board of Directors at their Feb. 9, 2010 Meeting
NERC Board of Trustees approved Nov. 4, 2010, and will be forwarded to FERC and the Canadian authorities for their approvals
PRC-006-NPCC-01
NPCC UFLS Regional
Standard and Draft
Program Requirements

2010 Fall Workshop

Gerry Dunbar
Senior Criteria Specialist
November 10th, 2010
UFLS Program

- NERC
  - UFLS Background and Existing Requirements

- NPCC
  - UFLS Criteria

- UFLS Issues
  - NPCC Regional Standard Drafting Team

- Applicability

- Implementation
  - Transition from D#12 to Regional Standard

- Status of UFLS Standards
NERC Requirements

- **UFLS Program Requirements:**
  - PRC-006, PRC-007, PRC-009
  - Applicable to the Regional Reliability Organization (RRO)

- **FERC Order 693 May 2007**
  - UFLS Requirements Apply to Users, Owners, Operators.
  - Standards Committee:
    - Absorbed All Three Standards into a single PRC-006-1
    - Establish Design and Documentation Requirements for UFLS.
    - Broad Program Characteristics.

- **Regional UFLS Standards:**
  - Support PRC-006-1 Continent Wide.
  - UFLS Program Specifics.
UFLS Program

NPCC Criteria

- NPCC Criteria (A3/Directory #2)
  - Automatic UFLS 10% @ 59.3 Hz.
  - Automatic UFLS 15% @ 58.8Hz.

- 2006 Assessment of UFLS Adequacy
  - Program Modifications
    - 5 Stages of Automatic UFLS and Anti Stall
    - Initial Threshold Higher (59.5Hz)
    - Block Sizes of 7%

- NPCC Directory #12
  - Revised UFLS Program Requirements June 2009
UFLS Program

**UFLS Issues**

- **Generator Tripping Above the Curve.**
  - Existing Directory#12 Curve.

- **Compensatory Load Shedding.**
  - Criteria Attachments.

- **Small Entities.**

- **Generator Applicability.**

- **Program Tolerances.**
  - SS38 Study Report
  - Implementation Plan Milestones.
UFLS Program

Applicability

- **NPCC Directory #12**
  - BA, TO, GO

- **UFLS Regional Standard**
  - PC, GO, DP, TO
  - DP/TO’s with 100MW or more of end use load
  - Small Entities
    - DP/TO with less than 25 MW exempt
  - GO’s 1MVA
UFLS Program

Implementation

- NPCC UFLS Implementation Plan (Directory#12)
  - Approved June 2009.
  - 6 year plan.
  - Annual Milestones.
  - Accelerated progress in first 3 years.
  - UFLS Regional Standard will adopt Directory #12 Implementation Plan when approved.
**Status of Draft Standards**

- **NERC PRC-006-1 UFLS Continent Wide**
  - Approved: Quorum 89.4% - Affirmative Ballots 84.6%
  - NERC BOT Approval November 4th, 2010
  - FERC Approval

- **PRC -006-NPCC-1 Regional Standard**
  - Two Open Process Postings
  - Pre Ballot Review and NPCC Membership Ballot
  - NERC and FERC Approvals
Questions or Comments?