

# NERC PRC Standards & SPCWG Activities Report to ERCOT SPWG

November 5, 2024

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# SPCWG

- SPCWG met 3 times since *July 2024* SPWG Meeting
- Next Meeting is December 12 via Webex

# SPCWG

- PRC-019-3 (Coordination of Generating Unit or Plant Capabilities, Voltage Regulating Controls, and Protection)
- PRC-019-2 addresses the reliability issue of miscoordination between generator capability, control systems, and protection functions. However, PRC-019-2 was developed with a bias toward synchronous generation and does not sufficiently outline the requirements for all generation resource types. The proposed Standard Authorization Request (SAR) aims to address a number of issues identified by the SPCS and revise the standard to be inclusive of all types of generation resources.
  - First Draft of PRC-019-3 has been posted for comment and voting that runs through 11/14/2022
    - First Draft failed to pass with only 39% approval
  - Second draft was posted and voting took place between 5/30/23-06/08/23
    - Second draft failed to pass with only 44% approval
- Pushed back on calendar to 2025 and beyond (Medium Priority)
- No Update for 11.05.2024

# SPCWG

- PRC-002 SAR (IRPTF) & Glencoe Light – Project 2021-04 Phase I
  - The Standards Committee accepted the two SARs on January 19, 2022.
  - Glencoe Light SAR
    - Drafted to clarify Requirement R1, Part 1.2 of PRC-002-2 for stations that have multiple owners of BES equipment (e.g. busses, breakers, transformer, transmission lines, etc.)
    - Redlined items added:
      - Move requirement to be 100 percent compliant within three (3) years following notification of a re-evaluated list by the responsible entity from the implementation plan to the standard itself
      - Add a criterion that constitutes a substantial change in fault current levels which would require changing SER/FR data recording locations.
      - Clarifying various terms such as “connected” and “directly connected” BES Elements. The standard should clearly define the terms “directly connected” versus “connected” as it relates to determining which elements are required to have the SER and FR data. PRC-002-2 uses “connected” in Requirements R1.2 and R3, however, “directly connected” is used in Requirement R2. One interpretation of “connected” versus “directly connected” is shown in Figure 1, where all breakers are considered “directly connected” and other BES elements such as transmission lines, transformers and generators are “connected” to the bus. Figure 2 shows an example of a ring bus arrangement with possible classification of “connected” and “directly connected” BES elements.
  - This update is addressing notifications of other owners of BES elements on busses required by PRC-002-4. Clarifications added to R1 (FR & SER) and R5 (DDR)
  - New requirement R13 addressing timeline (3 years) of installing FR, SER, and/DDR equipment after notification.
  - Final Draft was posted and voted on 12.07.22-12.16.22 and passed with 96%.
  - No Updates

# SPCWG

- PRC-002 SAR (IRPTF) & Glencoe Light – Project 2021-04
  - High Priority (Completed by 2024)
  - The Standards Committee accepted the two SARs on January 19, 2022.
  - Plan is to remove IBR from PRC-002 (PRC-002-5 Revision) and create new PRC-028-1 Standard specifically for IBR
  - IRPTF SAR - Phase II
    - The NERC Inverter-based Resource Performance Task Force (IRPTF) undertook an effort to perform a comprehensive review of all NERC Reliability Standards to determine if there were any potential gaps or improvements based on the work and findings of the IRPTF.
    - The IRPTF review raised concerns on PRC-002-2 methods for determining where to add disturbance monitoring.
    - With PRC-002-2 currently using short circuit MVA for SER & FR and DDR for generating facilities based on generator MVA or plant aggregate MVA, many inverter-based resources will not fall under the scope of this requirement.
    - Look at alternative ways of insuring recording is provided in these areas as well.
    - Only redline was to *“Consider proposed IEEE P2800 monitoring requirements and NERC Odessa Disturbance Report recommendations for modification or additions to existing requirements.”*
  - First Draft of PRC-028-1 was posted and voted on in September and failed to pass with 43%
  - Draft 2 posted and voted on 04/02/24 – 04/11/24. PRC-028-1 Failed to Pass – 50%
  - Draft 3 posted and voted on 05/31/24 – 06/17/24. PRC-028-1 Failed to Pass – 46%
    - PRC-002-5 Draft 3 included minor change to DDR data format breaker it out to its own requirement
  - Draft 4 posted and voted on 08/02/24 – 08/12/24. PRC-028-1 Passes with 80%
  - Final Draft posted and voted on 09/12/24 – 09/18/24. PRC-028-1 Passes with 84%

# SPCWG

- Project 2019-04 -New Standard Authorization Requests (SARs) proposed to address testing of AVR protective functions in PRC-005-6
  - **Low Priority**
  - SAR accepted October 20,2021
  - Nominations for additional drafting team members was sought and closed on December, 15, 2021
  - 3<sup>rd</sup> Round of comments ended last Friday (2/26). Provide clarity that the protective functions enabled within analog/Digital AVRs, excitation systems, and other control systems that respond to electrical quantities
  - Update the applicability of the standard to include UFLS-only DPs
  - Modify requirements to cover Protection System DC supply technologies that are not currently covered in the standard
  - Some notable updates to the latest SAR revision:
    - AVR control functions already within scope of PRC-005 but not clarified
    - Fix protection system vs function definition and add to scope
    - Not limiting protection functions just to AVR and generators but to any equipment.
  - First Daft was posted and failed to pass with only 35%.
  - **Pushed back on calendar to 2025 and beyond (Medium Priority)**
  - **No Updates**

# SPCWG

- NERC Standards and 61850 Technical Reference Document
  - Create a technical reference for 61850 and the impacts on NERC Protection System definition and related standards
  - Reference to include clarity in 61850 P&C designs regarding Protections System definition, relay maintenance requirements, and recommended documentation to support design
  - Currently working on scope and outline for paper to get approval to add to SPCWG Work Plan.
  - Document drafted
  - Draft Planned by End of Year

# SPCWG

- TPL-001-5.1 Footnote 13.d SAR (Project 2022-02)
  - SAR was posted in April-May of 2023
  - TPL-001-5.1 Footnote 13: For purposes of this standard, non-redundant components of a Protection System to consider are as follows:
    - a. A single protective relay which responds to electrical quantities, without an alternative (which may or may not respond to electrical quantities) that provides comparable Normal Clearing times;
    - b. A single communications system associated with protective functions, necessary for correct operation of a communication-aided protection scheme required for Normal Clearing (an exception is a single communications system that is both monitored and reported at a Control Center);
    - c. A single station dc supply associated with protective functions required for Normal Clearing (an exception is a single station dc supply that is both monitored and reported at a Control Center for both low voltage and open circuit);
    - d. A single control circuitry (including auxiliary relays and lockout relays) associated with protective functions, from the dc supply through and including the trip coil(s) of the circuit breakers or other interrupting devices, required for Normal Clearing (the trip coil may be excluded if it is both monitored and reported at a Control Center).
  - Issue is with item d, which provides an exception for a single trip coil that is monitored, but not the control circuitry.
  - This SAR requests that any non-redundant components of the control circuitry may be excluded if they are both monitored and reported.
  - They have drafted a 2-page recommendation and would like to get this out
  - No Update



# SPCWG

- Project 2020-02 Modifications to PRC-024
  - PRC-024-3 is the Generator Voltage and Frequency Ride-Through Settings and Requirements
  - New PRC-029 standard to be proposed to deal specifically with the ride-through requirements of IBR. This is going to be based on IEEE 2800. This is designed to address FERC order 901.
  - After approval of PRC-029, PRC-024 will be modified to only apply towards synchronous machines.
  - Draft 1 posted 04/12/24 - 04/22/24
    - PRC-024-3 had 61%. PRC-029-11 had 25%
  - Draft 2 posted 06/28/24 - 07/08/24
    - PRC-024-3 Passed with 83%. PRC-029-11 Failed with 35%
  - Draft 3 for PRC-029-1 posted 08/02/24 – 08/12/24. Failed with 53%
  - Draft 4 for PRC-029-1 posted 09/24/24 – 10/04/24. Passed with 78%
  - Final Draft for PRC-024-3 posted 09/25/24 – 09/30/24. Passed with 86%

# SPCWG

- 2023-02 Analysis and Mitigation of BES Inverter-Based Resource Performance Issues
  - New PRC-030-1 standard drafted to require analysis and mitigation unexpected or unwarranted protection and control operations from inverter-based resources following the identification of such a performance issue. This includes any types of protections or controls that result in abnormal performance issues within the plant, including abnormal performance resulting in anomalous behavior of active power output from the facility during events. Considerations may be needed for legacy facilities, but the root cause analysis of the abnormal performance and determination of any mitigating measures should be conducted. The SAR should be applicable to all Bulk Electric System (BES) inverter-based generating resources, including battery energy storage resources.
  - Somewhat analogous to PRC-004 for IBR
  - Draft 1 posted 04/9/24 - 04/18/24. Failed with only 21%.
  - Draft 2 posted 7/1/24 - 7/10/24. Failed with only 31%.
  - Draft 3 posted 08/02/24 – 08/12/24. Passed with 76%.
  - Draft 4 posted 09/04/24 – 09/13/24. Failed with 69%.
  - Final Draft posted 09/23/24 – 09/27/24. Passed with 71%.

# Questions