Unofficial Comment Form
Project 2007-06 System Protection Coordination
PRC-027-1 (Preliminary Draft 5)

Please DO NOT use this form for submitting comments. Please use the electronic form to submit comments on this preliminary draft 5 of standard PRC-027-1 – Coordination of Protection System Performance During Faults. The electronic comment form must be completed by 8 p.m. Eastern, Tuesday, October 21, 2014.

If you have questions, please contact Al McMeekin, NERC Standards Developer by email at Al.McMeekin@nerc.net or by telephone at (404) 446-9675.

The project page may be accessed by clicking here.

Background Information
The System Protection Coordination Standard Drafting Team (SPCSDT) created a new results-based standard, PRC-027-1, with the stated purpose: “To maintain the coordination of Protection Systems installed for the purpose of detecting Faults on BES Elements and isolating those faulted Elements, such that the Protection System components operate in the intended sequence during Faults.” This standard incorporates and clarifies the coordination aspects of Requirements R3 and R4 from PRC-001-1.1. Following draft 4, FERC staff from the Office of Electric Reliability raised significant concerns on the posted draft. The primary concern was that the proposed standard did not address the coordination of Protection Systems within a Transmission Owner’s footprint, referred to as “internal” or “intra-entity” Protection Systems. Following those discussions, the SPCSSDT prepared this preliminary draft 5 of PRC-027-1 and now seeks stakeholder input on this proposal during a 21-day informal comment period.

Draft 5 of PRC-027-1 modifies the applicability of the standard to include “Protection Systems installed for the purpose of detecting Faults on BES Elements, and isolating those faulted Elements,” whereas, prior drafts of the standard limited the applicability to “Protection Systems installed for the purpose of detecting Faults on Interconnecting Elements.” This change to the applicability covers the coordination of Protection Systems for all “internal” or “intra-entity” connections between BES Elements.

Prior drafts of PRC-027-1 would not have been easily adaptable to this change, and as a result, the drafting team has altered its approach in the draft. The draft now consists of two proposed requirements.

Requirement R1 mandates an entity to implement a process to coordinate its BES Protection Systems, and stipulates certain attributes that must be included in the documented coordination process. Because entities’ Protection System designs and philosophies vary greatly, the drafting team has included necessary flexibility in developing the coordination processes.
Requirement R2 mandates an entity have documentation, within 60 calendar months after the effective date of the standard, that the Protection Systems for the Elements specified in Requirement R2 are coordinated. Requirement R2 is a one-time performance requirement necessary to establish a baseline of coordination.

21-day Informal Comment Period
For this informal posting, the drafting team is soliciting stakeholder feedback on the scope and work product developed thus far. The drafting team intends to take this informal feedback and use it to begin formal development of draft 5 of PRC-027-1 in November. The electronic comment form must be completed by 8 p.m. Eastern Tuesday, October 21, 2014. Entities may communicate additional feedback directly to the drafting team through its open meetings leading up to the formal posting in November.

Please enter comments in simple text format. Bullets, numbers, and special formatting will not be retained (even if it appears to transfer formatting when copying from the unofficial Word version of the form into the official electronic comment form). If you enter extra carriage returns, bullets, automated numbering, symbols, bolding, italics, or any other formatting, that formatting will not be retained when you submit your comments.

- Separate discrete comments by idea, e.g., preface with (1), (2), etc.
- Use brackets [] to call attention to suggested inserted or deleted text.
- Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.
- **Do not use** formatting such as extra carriage returns, bullets, automated numbering, bolding, or italics.
- **Please do not repeat other entity’s comments.** Select the appropriate item to support another entity’s comments. An opportunity to enter additional or exception comments will be available.
- If supporting other’s comments, be sure the other party submits comments.
Questions:

1. Do you agree with the concept of requiring a process to address the coordination of Protection Systems (Requirement R1)? If not, please provide the basis for your disagreement and your proposed alternative(s).

   [ ] Yes  [ ] No

   Comments:

2. Do you agree that Parts 1.1 through 1.5 of Requirement R1 are essential elements of a successful coordination process? Are there others that should be included? If not, please provide the basis for your disagreement and your proposed revisions, or other additions.

   [ ] Yes  [ ] No

   Comments: What is meant by “condition based”? Condition-based (referred to in Part 1.3) should be clarified in the Rationale Box for Requirement R1.

   It is implicit in requirement R1 that setting development is implicit in the process. The Drafting Team should consider deleting Part 1.5. It is addressed in Part 1.2.

   A Part should be added to address the implementation of the coordinated settings to Protection System equipment.

   There is no need for a quality or review process in this standard. As per Paragraph 81, the “how” is not necessary. It is the responsibility of the engineering or technical staff to implement their in-house process.

3. The coordination process will include a set of minimum trigger(s) (Part 1.3) to review existing Protection System settings. These triggers will be developed by the drafting team during the standard development process. Please provide any suggestions for appropriate triggers.

   Comments: A Protection System misoperation should be a trigger. Our comment response to Question 2 suggested that possibly a Part be added. An addition or change to the interconnecting Elements can be used as a minimum trigger.

4. Requirement R2 mandates entities have documentation, within 60 calendar months after the effective date of the standard, that the Protection Systems for the specified Elements in Parts 2.1 through 2.3 are coordinated. Do you agree with the chosen Elements and do you have any suggestions for others?
If not, please provide the basis for your disagreement and your proposed revisions, or other suggestions.

☐ Yes
☒ No

Comments: Parts 2.1 through 2.3 address interconnections. FERC was concerned with the standard not addressing the coordination of Protection Systems within a Transmission Owner’s footprint, referred to as “internal” or “intra-entity” Protection Systems. A Part (or Parts) must be added to specifically address that concern. Wording still needs to be added to capture FERC staff’s intent.

The technical justification for selecting the 200kV threshold in Part 2.1 needs to be provided.

5. Do you agree with the proposed Measures? If not, please provide the basis for your disagreement and your proposed revisions.

☒ Yes
☐ No

Comments:

6. If you have any other comments that you haven’t already provided in response to the above questions, please provide them here.

Comments: A definition for “coordination” should be developed to eliminate some of the variations in Protection System design philosophies.

The language in Introduction Section 4. Applicability sub-Part 4.2.1 creates a potential hole in Protection System coordination. In some applications, Protection Systems are installed for the purpose of detecting Faults on non-BES Elements but may impact the BES if they are incorrectly set. For example, a radial delivery point tapped off a BES transmission line may have a blocking relay installed that does not appropriately detect faults in its designated zone of protection, causing the transmission line terminals to trip impacting the BES. Suggest that the wording of 4.2.1 be revised to read:
4.2.1 Protection Systems installed for the purpose of detecting Faults on BES Elements, and isolating those faulted Elements, and including those Protection Systems that if improperly coordinated could result in BES Element tripping.

The Purpose of PRC-001-1.1 is “To ensure system protection is coordinated among operating entities.” The Purpose of PRC-027-1 is “To maintain the coordination of Protection Systems installed for the purpose of detecting Faults on BES Elements and isolating those faulted Elements, such that the Protection System components operate in the intended sequence during Faults.” The industry definition of coordination is “Coordination of protective devices is the determination of graded settings to achieve selectivity.” “Selectivity in a protective system refers to the overall design of protective strategy wherein only those protective devices closest to a fault will operate to remove the faulted component...”. Protection System coordination achieves selectivity, not only with interconnections, but within a Transmission Owner’s footprint. PRC-001-1.1 already addresses what PRC-027-1 is addressing. Efforts should be directed at improving PRC-001-1.1 rather than producing a new standard.