Project Development Background

The undervoltage load shedding (UVLS) standard drafting team (SDT) was tasked with addressing Misoperation of UVLS equipment during the development of version one of PRC-010 and version three of PRC-004 in Project 2010-05.1 (i.e., Misoperation). This project has been named phase 2 of Project 2008-02 (i.e., UVLS) for clarity purposes. Each SDT for these two projects outlined work necessary to address Misoperation of UVLS equipment. This work was deferred, at the time, because both PRC-010-1 and PRC-004-3 contained dependencies with other projects requiring their completion. This phase two is a continuation of the work performed under the Standards Authorization Request (SAR) for Project 2008-02.

The revisions proposed in Reliability Standard PRC-010-2 meet the following objectives:

- Address the UVLS Misoperation the remaining work due to the retirement of PRC-022-1 (Undervoltage Load Shedding Program Performance) during the development of PRC-010-1 (Undervoltage Load Shedding)
- Ensure UVLS equipment (i.e., operation or non-operation) within the UVLS Program is assessed and mitigated

Basis for Revision

Originally, Misoperation of UVLS equipment was planned to be appended to a future version of PRC-004 (Protection System Misoperation Identification and Correction). The SDT is proposing a two-prong approach by revising both PRC-004 and PRC-010 to address the concern of identifying Misoperations of UVLS equipment in PRC-022-1.
First, the SDT proposes an addition to the Applicability section of PRC-004 to include UVLS that is intended to trip one or more Bulk Electric System (BES) Elements. This is consistent with previous communication to industry about addressing Misoperation of UVLS equipment.\(^1\) Entities will be required to address UVLS that trips a BES Element similarly to other Protection Systems in PRC-004. While the revision to PRC-004 consistent with the communicated approach, the SDT determined that the proposed revision fails to address the performance (operation or non-operations) of UVLS Program equipment not covered by the strict processes of PRC-004.

Second, the SDT is proposing clarifying revisions in PRC-010-2, Requirements R4 and R5 to address UVLS Program equipment performance. These revisions are not requiring UVLS entities to address UVLS protective relays not covered by the strict processes of PRC-004; however, PRC-010-2 is requiring UVLS entities to address the deficiencies (e.g., Misoperations) identified in the assessment performed by Planning Coordinator or Transmission Planner in Requirement R4. Deficiencies include the performance (operation or non-operation) issues of UVLS Program equipment. These deficiencies, if any, are addressed by the UVLS entities through a Corrective Action Plan (CAP) developed in Requirement R5 and executed by the UVLS entities in Requirement R2 of PRC-010.

The term “Misoperation” as defined by the Glossary of Terms Used in NERC Reliability Standards is not used within the Requirements of PRC-010; however, the term is used in the Guidelines and Technical Basis section of the standard to provide clarity that UVLS Program equipment deficiencies include Misoperations that are to be corrected by UVLS entities. The PRC-010-2 Reliability Standard mandates that UVLS entities are to correct the deficiencies identified by the Planning Coordinator or Transmission Planner, such as Misoperation of UVLS equipment. Deficiencies are identified through either the periodic assessment or an assessment performed following an event and included in a CAP to the UVLS entity. The structure used by the SDT allows the Planning Coordinator and Transmission Planner to assess UVLS equipment for Misoperation under PRC-010 rather than the Generator Owner, Transmission Owner, and Distribution Provider applicable to the strict processes of PRC-004.

The two-pronged approach ensures that any UVLS Program equipment containing a deficiency is identified and corrected under PRC-010 and UVLS that trips a BES Element under is corrected under PRC-004 to address the requirements in the retired PRC-022-1.

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\(^1\) Refer to Implementation Plan for PRC-010-1 (http://www.nerc.com/pa/stand/Pages/PRC0101RI.aspx) and PRC-010-1 (http://www.nerc.com/pa/Stand/Pages/ReliabilityStandards.aspx), Introduction in the Guidelines and Technical Basis, last paragraph.
Question

1. Do you agree that the Misoperation identification and correction of UVLS equipment as retired by PRC-022-1, Requirements R1 and R1.5 is addressed by the proposed revisions of PRC-004-5 and PRC-010-2? If not, please provide comments and suggestions to improve clarity.

☐ Yes
☒ No

Comments: A general comment regarding the Applicability Section of PRC-004-5 is that the items listed under sub-Part 4.2.1 are not Facilities by NERC definition.

The addition of 4.2.3 to the Facilities Section “Undervoltage load shedding (UVLS) that is intended to trip one or more BES Elements” is not necessary. The BES definition excludes Elements that serve radial load. UVLS schemes are normally intended to trip loads which are supplied by radial circuits (feeders), and these circuits (feeders) would not normally be included in the BES definition. It may be helpful for the drafting team to include an example in the application guideline to provide greater clarity.

In the Basis for Revision Section of what should be PRC-010-2, on page 3 of the standard, the last two sentences affirm that the rationale boxes in the Supplemental Material section of the standard will remain. The rationale box for Requirement R5 will be removed. The only Rationale Box in the B. Requirements and Measures section of the standard is for R4. Should the statement read “The rationale box for Requirement R4 will be removed.”

We agree that the Misoperation identification and correction of UVLS equipment as retired by PRC-022-1, Requirements R1 and Part R1.5 is addressed by the proposed revisions of PRC-004-5 and PRC-010-2. However, the addition of Part 4.2 to PRC-010-2 may create duplicate effort for evaluating proper operations and misoperations of UVLS equipment.

This comment is made on the basis that PRC-004-4 already requires UVLS entities (TO, GO and DP) to assess and identify whether or not misoperations were the cause of BES interrupting device(s) (which now include UVLS) operations. Through this assessment and identification process, the proper or improper operations of the UVLS equipment would have been identified and, where necessary and appropriate, corrective action plans would have been developed and implemented. To have an additional Part 4.2 which requires the Planning Coordinator or Transmission Planner to evaluate the performance (i.e., operation and non-operation) of the UVLS Program seems redundant and unnecessary, despite such evaluation is performed by different responsible entities. Propose that Part 4.2 be removed.
Additionally, it is not clear which UVLS Misoperations are the subject of the proposed revised PRC-004-5 standard. The UVLS facilities of PRC-004-5 are “Undervoltage load shedding (UVLS) that is intended to trip one or more BES Elements.” The typical UVLS schemes trip circuits (feeders) that supply loads. These circuits (feeders) are not normally BES elements since they are excluded by the BES definition that became effective July 1, 2014. Clarification is needed.