

Consideration of Comments

Project Name: 2008-02.2 Phase 2 UVLS PRC-004-5 & PRC-010-5

Comment Period Start Date: 2/20/2015

Comment Period End Date: 4/8/2015

Associated Ballots: 2008-02.2 Phase 2 UVLS PRC-004-5 & PRC-010-2 IN 1 ST

There were 49 sets of responses, including answers and comments from approximately 45 different people from approximately 40 different companies representing 7 of the 10 Industry Segments as shown on the following pages.

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Senior Director of Standards, [Valerie Agnew](#) (via email) or at (404) 446-2566.

Summary of Changes

The introductory section of both PRC-004-5 and PRC-010-2 standards were updated. The Development Step Completed and Description of Current Draft were updated. The Project Development Background received three clarifying edits and in PRC-010-2, a missing footnote was added and the reference to R5 was corrected to R4. Other cosmetic cleanup was performed to bring the standard into conformity with the NERC style guide.

Both Implementation Plans were clarified in the General Considerations to better explain the two standard going forward together. The project Mapping Document was augmented to demonstrate how PRC-004-5 addresses the Corrective Action Plan provision from the retired PRC-022-1 in the first phase of the project.

Summary:

There were at least three comments that raised issues that were related to the work the standard drafting team (SDT) completed during the development of PRC-010-1. The SDT was unable to address the comment because it was beyond the scope of work. At least two commenters noted that either the proposed PRC-010-1, Requirement R4, Part 4.2 or PRC-004-5, Applicability 4.2.3 was unnecessary. The SDT did not make a change, but rather explained the rationale why both are important to reliability. There were about three questions about the perceived overlap of PRC-004-5 and PRC-010-1 and the timing differences. The SDT did not make any changes, but explained the intent between the two standards and the reason that there are two different time periods. One commenter suggested allowing an additional 12 months for implementation. The SDT believed that was unnecessary because the UVLS changes do not represent a significant burden to industry and only impact a few entities. Last, there were at least two comments that the PRC-004-5 applicability was meaningless because radial lines would not be Bulk Electric System (BES) Elements. The SDT added the provision in PRC-004-5 to cover the few BES UVLS relays currently applied in some systems across North America as well as cover any future changes that could occur to the BES definition.

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.

John Fontenot - Bryan Texas Utilities - 1 -

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Ken Lindberg - Bryan Texas Utilities - 5 - TRE

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Glenn Pressler - CPS Energy - 1 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

John Williams - Tallahassee Electric (City of Tallahassee, FL) - 3 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Dennis Minton - Florida Keys Electric Cooperative Assoc. - 1 -

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Gul Khan - Gul Khan On Behalf of: Rod Kinard, Oncor Electric Delivery, 1

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2 - SPP

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Dana Wheelock - Seattle City Light - 3 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Thomas Foltz - AEP - 5 -

Selected Answer: No

Answer Comment:**PRC-010-2, R5:**

UVLS entities should have input in the development of the CAP, as opposed to simply having it provided to them. We suggest adding the phrase “in accordance with the UVLS entities” so that R5 instead reads... “Each Planning Coordinator or Transmission Planner that identifies deficiencies in its UVLS Program during an assessment performed in either Requirement R3 or R4 shall, in accordance with the UVLS entities, develop a Corrective Action Plan to address the deficiencies and subsequently provide the Corrective Action Plan, including an implementation schedule, to UVLS entities...”

While AEP is supportive of the overall direction and substance of the proposed changes, we have chosen to vote negative driven by our objections to not involving the UVLS entities in the development of the CAP in R5.

Response:

The drafting team thanks you for your comments. The comment pertains to work completed under the first phase of the UVLS project that developed version 1 of PRC-010 and the retired PRC-022-1. This phase 2 work only pertains to addressing UVLS equipment Misoperation and relies on the previously balloted and adopted PRC-010-1.

Likes: 0

Dislikes: 0

Si Truc Phan - Hydro-Québec TransÉnergie - 1 - NPCC

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

David Jendras - Ameren - Ameren Services - 3 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Mike Smith - Manitoba Hydro - 1 -

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

John Merrell - Tacoma Public Utilities (Tacoma, WA) - 1 -

Selected Answer: Yes

Answer Comment:

The proposed revisions appear to address Misoperation identification and correction of UVLS equipment. However, there may be some cases in which the timeframes in PRC-004-5 and PRC-010-2 are not completely compatible. Specifically, under PRC-010-2 Requirement R4, the Planning Coordinator (PC) or Transmission Planner (TP) has 12 calendar months of an event that resulted in a voltage excursion for which its UVLS Program was designed to operate to perform an assessment to evaluate the performance (i.e., operation and non-operation) of the UVLS Program equipment. However, under PRC-004-5 Requirement R1, each Transmission Owner (TO) and Distribution Provider (DP) that owns a BES interrupting device that operated under the circumstances in Parts 1.1 through 1.3 only has 120 calendar days of the BES interrupting device operation to identify whether its Protection System component(s) caused a Misoperation. It seems like a TO or DP would have to determine if there was a Misoperation before the PC or TP might have completed their assessment. Could this result in premature determination by a TO or DP; or could a TO or DP come to a different conclusion than their PC or TP? It seems like the timeframes in these requirements need to be better aligned. Alternatively, perhaps only PRC-010-1 should be revised, or perhaps the distinction between what the two standards are requiring needs to be made clearer. Another possible issue is that each standard requires development of CAPs, and the timeframes required to develop the CAPs are different.

Response:

The drafting team thanks you for your comment. Entities that experience an operation of the UVLS equipment that trip one or more BES Elements (irrespective of a voltage excursion) must address reviews in a shorter time (PRC-004). Likewise, planners will assess the performance of the UVLS Program following an event that resulted in a voltage excursion for which its UVLS Program was designed to operate. The assessment determines whether the UVLS equipment operated according to the design of the program, which will include the operation or non-operation of any UVLS equipment within the program.

The following addresses the timing between the proposed PRC-004-5 and PRC-010-2.

For an event that resulted in a voltage excursion for which the UVLS Program was designed to operate, it is acceptable for an applicable entity under the proposed PRC-004-5 to begin reviewing the operation. If the entity determines a Misoperation occurred, it may develop a Corrective Action Plan (CAP). Developing the CAP and correcting the Misoperation could occur in advance of the assessment conducted by the Planning Coordinator (PC) or Transmission Planner (TP) under the proposed PRC-010-2. The drafting team would anticipate the applicable entity under PRC-004 to communicate their findings; therefore, the PC or TP would account for the findings during the post event assessment.

For reliability, it is important to address UVLS that trip BES Elements on a timely basis. The PC or TP under PRC-010 is allocated an amount of time that is commensurate with the work necessary to perform the post event analysis. For example, collecting event data such as voltage, confirming UVLS settings, potential Misoperation information, and performing the analysis to evaluate the overall performance of the UVLS Program.

Likes: 0

Dislikes: 0

Michael Jones - National Grid USA - 1 -

Selected Answer: No

Answer Comment:

National Grid voted Negative regarding PRC-010-1 and continues to vote Negative regarding PRC-010-2. The concern is that R2 gives considerable authority to the Planning Coordinator or Transmission Planner. Nowhere in the new standard is there any provision for a UVLS entity such as a Transmisison Owner to comment or advise on the feasibility of the program specification, and particularly the implementation schedule. There should be an opportunity for the UVLS entity to provide input to the plan and schedule, and a mechanism for resolving disagreement. We have a similar concern with R5 with regard to the specification and execution of the Corrective Action Plan.

Please consider having separate ballots for PRC-010-2 and PRC-004-5, instead of a combined ballot.

Response:

The drafting team thanks you for your comments. The comment pertains to work completed under the first phase of the UVLS project that developed version 1 of PRC-010 and retired PRC-022. This phase 2 work only pertains to addressing UVLS equipment Misoperation and relies on the previously balloted and adopted PRC-010-1.

Likes: 0

Dislikes: 0

Michael Shaw - Lower Colorado River Authority - 6 -

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Brian Shanahan - National Grid USA - 3 -

Selected Answer: No

Answer Comment:

National Grid voted Negative regarding PRC-010-1 and continues to vote Negative regarding PRC-010-2. The concern is that R2 gives considerable authority to the Planning Coordinator or Transmission Planner. Nowhere in the new standard is there any provision for a UVLS entity such as a Transmission Owner to comment or advise on the feasibility of the program specification, and particularly the implementation schedule. There should be an opportunity for the UVLS entity to provide input to the plan and schedule, and a mechanism for resolving disagreement. We have a similar concern with R5 with regard to the specification and execution of the Corrective Action Plan.

Please consider having separate ballots for PRC-010-2 and PRC-004-5, instead of a combined ballot.

Response:

The drafting team thanks you for your comments. The comment pertains to work completed under the first phase of the UVLS project that developed version 1 of PRC-010

and retired PRC-022. This phase 2 work only pertains to addressing UVLS equipment Misoperation and relies on the previously balloted and adopted PRC-010-1.

Likes: 0

Dislikes: 0

Stephen Pogue - M and A Electric Power Cooperative - 3 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

christina bigelow - Electric Reliability Council of Texas, Inc. - 2 -

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Chris Scanlon - Exelon - 1 -

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Shari Heino - Brazos Electric Power Cooperative, Inc. - 5 -

Selected Answer: No

Answer Comment:

See ACES comments

Response:

Likes:

0

Dislikes:

0

Chris Gowder - Florida Municipal Power Agency - 3,4,5,6 - FRCC

Selected Answer:

Answer Comment:

Response:

Likes:

0

Dislikes:

0

Kaleb Brimhall - Colorado Springs Utilities - 5 -

Selected Answer:

Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Lee Pedowicz - Northeast Power Coordinating Council - 10 - NPCC

Selected Answer: No

Answer Comment:

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.

Response:

The drafting team thanks you for your comments. The section titles “Functional Entities” and “Facilities” found in the standard do not refer specifically to the *Glossary of Terms Used in NERC Reliability Standards* or the definitions identified in the NERC Rules of Procedure.

With regard to the comment about radial lines, the applicability in the proposed PRC-004-5 addresses the potential for the existence of UVLS that trip one or more BES Elements today, or in the future. For example, if a change were to occur in the BES definition, UVLS

equipment would be properly addressed to avoid a gap in reliability. The drafting team believes the distinction is clear and an example is not necessary.

The observation concerning the Rational Box for Requirement R5 is correct. This text should reference Requirement R4. Change made.

Concerning the duplication of effort between the proposed PRC-004-5 and PRC-010-2, the drafting team notes that PRC-004 requires the owners of UVLS to evaluate the relay when it trips a BES interrupting device. In PRC-010, the planners evaluate the performance of the UVLS Program with consideration whether the UVLS equipment operated or did not operate in accordance with the UVLS Program design.

For an event that resulted in a voltage excursion for which its UVLS Program was designed to operate, it is acceptable for an applicable entity under the proposed PRC-004-5 to begin reviewing the operation. If the entity determines a Misoperation occurred, it may develop a Corrective Action Plan (CAP). Developing the CAP and correcting the Misoperation could occur in advance of the assessment conducted by the Planning Coordinator (PC) or Transmission Planner (TP) under the proposed PRC-010-2. The drafting team would anticipate the applicable entity under PRC-004 to communicate their findings; therefore, the PC or TP would account for the findings during the post event assessment.

Likes: 0

Dislikes: 0

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Matt Culverhouse - City of Bartow, Florida - 3 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Payam Farahbakhsh - Hydro One Networks, Inc. - 1 -

Selected Answer: Yes

Answer Comment: The posted PRC-010-2 has requirement 4.2 applicable to PC and TP. However, PC/TP generally don't have the expertise for the design/engineering aspects. The SDT should consider making 4.2 applicable to the owners of the schemes.

Response: The drafting team thanks you for your comment. The intent of the proposed PRC-010-2, Requirement R4, Part 4.2 is to require the Planning Coordinator or Transmission Planner to assess the UVLS Program following an event that resulted in a voltage excursion for which its UVLS Program was designed to operate. The planner will collect information concerning the event in order to conduct an assessment whether (4.1) the program resolved the undervoltage issues associated with the event, and (4.2) the program equipment operated or did not operate as expected according to the characteristics of the event. The assessment by its very nature assesses the equipment at the program level and not the design/engineering aspects applicable to UVLS Entities.

Likes: 0

Dislikes: 0

Mark Wilson - Mark Wilson On Behalf of: Leonard Kula, Independent Electricity System Operator, 2

Selected Answer: No

Answer Comment: We 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. However, the addition of Part 4.2 to PRC-010-2 may create duplicated 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.

We therefore propose that Part 4.2 be removed.

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

Response:

The drafting team thanks you for your comments.

Concerning the duplication of effort between the proposed PRC-004-5 and PRC-010-2, the drafting team notes that PRC-004 requires the owners of UVLS to evaluate the relay when it trips a BES interrupting device. In PRC-010, the planners evaluate the performance of the UVLS Program with consideration whether the UVLS equipment operated or did not operate in accordance with the UVLS Program design.

For an event that resulted in a voltage excursion for which the UVLS Program was designed to operate, it is acceptable for an applicable entity under the proposed PRC-004-5 to begin reviewing the operation. If the entity determines a Misoperation

occurred, it may develop a Corrective Action Plan (CAP). Developing the CAP and correcting the Misoperation could occur in advance of the assessment conducted by the Planning Coordinator (PC) or Transmission Planner (TP) under the proposed PRC-010-2. The drafting team would anticipate the applicable entity under PRC-004 to communicate their findings; therefore, the PC or TP would account for the findings during the post event assessment.

With regard to the comment about radial lines, the applicability in the proposed PRC-004-5 addresses the potential for the existence of UVLS that trip one or more BES Elements today, or in the future. For example, if a change were to occur in the BES definition, UVLS equipment would be properly addressed to avoid a gap in reliability. The drafting team believes the distinction is clear and an example is not necessary.

Likes: 0

Dislikes: 0

Jeni Renew - SERC Reliability Corporation - 10 - SERC

Selected Answer: No

Answer Comment: 1) On the clean versions of PRC-010-2 and PRC-004-5, please remove the 'under' after 'BES Element' in the Basis for Revision on page 2 last paragraph. "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."

2) PRC-004-5 and PRC-010-2 both require development of corrective action plans (CAP) with different time requirements (PRC-010-2 provides 12 months to analyze an operation. PRC-004-5 R1 requires identification in 120 days. Does the 120 days start during the 12 months of analysis or is the expectation that the Misoperation will be identified in the first 120 days if a BES Element is involved?) Can you provide examples to clarify which standard is to be referenced for developing the CAP?

3) Please explain how there is no double jeopardy having requirements for CAPS in multiple standards?

Example: An entity has a BES breaker that should have tripped during a UVLS event but did not trip. Is this reportable under PRC-010-2 or PRC-004-5? Which standard's time frame applies?

Response:

The drafting team thanks you for your comments.

1) The observation about the additional “under” has been revised as noted. Change made.

2) The 120 calendar days begins when a BES interrupting device operates as required by the proposed PRC-004-5, Requirement R1; therefore, it would start at the same point defined by the proposed PRC-010-2. See #3 about which standard is addressing the Corrective Action Plan (CAP).

3) For an event that resulted in a voltage excursion for which its UVLS Program was designed to operate, the planner would assess UVLS equipment under the proposed PRC-010-2, Requirement R4, Part 4.2 and provide a CAP, if necessary, to the UVLS Entity. Under the proposed PRC-004-5, the UVLS equipment owner would develop a CAP on its own to address any BES UVLS equipment Misoperation.

(From the “Example”) However, in the example above the UVLS owner would not be obligated to review the UVLS relay because a BES interrupting device did not operate (see PRC-004-5, Requirement R1). In this case, the planner would identify the non-operation of the UVLS that should have tripped the BES Element. Additionally, the planner would develop a Corrective Action Plan (CAP) for the UVLS Entity to implement. The

Misoperation of UVLS is not reportable by either PRC-010 or PRC-004, but is reportable by the equipment owner under Section 1600 of the NERC Rules of Procedure, Request for Data or Information.

Likes: 0

Dislikes: 0

Rachel Coyne - Texas Reliability Entity, Inc. - 10 -

Selected Answer: No

Answer Comment:

Texas RE is concerned that an entity will not analyze a mis-operation if it does not trip a BES element. The language in PRC-004-5, “intended to trip one or more BES elements”, may create a reliability gap. In the ERCOT region, there is little to no UVLS or UFLS that will or is intended to trip a BES element. It is not in the best interest of reliability to have a mis-operation occur and an entity not be required to analyze the issue and provide corrective actions.

Furthermore, there is an inconsistency with the language in PRC-010-2 and PRC-004-5 due to the use of the word “impact” indicated in PRC-010-2. In the ERCOT region, relays can have a major impact on the BES and would meet the requirements of PRC-010-2. Unfortunately, because of the language included in PRC-004-5, if entity determines that the UVLS is not intended to trip BES elements, the mis-operation would not need to be analyzed.

Response:

The drafting team thanks you for your comments and contends that entities will address UVLS (not associated with a UVLS Program) that does not trip a BES Element because load would be lost. Under the UVLS Program, such UVLS equipment is required to be assessed for an event that resulted in a voltage excursion for which its UVLS Program was

designed to operate. Therefore, there is no inconsistency or gap in addressing UVLS equipment.

Likes: 0

Dislikes: 0

Oliver Burke - Entergy - Entergy Services, Inc. - 1 -

Selected Answer: No

Answer Comment: Entergy supports comments provided by SERC PCS group.

Response: The drafting team thanks you for your support of SERC PCS group comments.

Likes: 0

Dislikes: 0

Kathleen Black - DTE Energy - 3,4,5 - RFC

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Catherine Wesley - PJM Interconnection, L.L.C. - 2 - SERC,RFC

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Richard Vine - California ISO - 2 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Brian Evans-Mongeon - Utility Services, Inc. - 4 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RFC

Selected Answer: Yes

Answer Comment: Duke Energy agrees with the proposal made by the drafting team. We thank the drafting team for their efforts.

Response: The drafting team thanks you for your comments.

Likes: 0

Dislikes: 0

Paul Malozewski - Hydro One Networks, Inc. - 3 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

George Tatar - Black Hills Corporation - 5 -

Selected Answer:

Answer Comment:**Response:****Likes:** 0**Dislikes:** 0

Jason Marshall - ACES Power Marketing - 6 - MRO,WECC,TRE,SERC,SPP,RFC

Selected Answer: No

Answer Comment:

(1) We believe that the modifications to PRC-010 and PRC-004 are duplicative and overlapping. As proposed, PRC-004 will require equipment owners to evaluate any UVLS relay that they have installed regardless of whether it is part of an RAS, UVLS Program or installed independently for local reasons, while PRC-010 requires the PC or TP to evaluate the “performance of UVLS Program equipment” for voltage excursions. While we disagree with the TP or PC having responsibility to evaluate equipment performance, we are even more concerned that there is not a clear delineation between when PRC-004 applies for evaluating equipment performance and when PRC-010 applies. As written now, there would appear to be an overlap when UVLS relays that are part of a UVLS program operate. A simple solution to eliminate this overlap and duplication would be to strike Part 4.2. Then, the PC and TP would appropriately rely the equipment owners to perform their own evaluation, which is where the responsibility should belong.

(2) The supporting documentation such as the Basis for Revision, Guidelines and Technical Basis and Frequently Asked Questions neither adequately explain the need for duplication between PRC-004 and PRC-010 nor the demarcation for responsibility for evaluating equipment performance. In fact, these supporting documents actually are contradictory at times. For example, the end of the second paragraph states that

PRC-004 does not cover the “performance (operation or non-operations) of UVLS Program equipment not covered by the strict process of PRC-004”. Yet it never explains how PRC-004 does not cover the performance. We disagree and believe it does cover the performance. If the drafting team intends the performance of the equipment to be something different than whether the UVLS relays operated correctly or not, this needs further explained in the technical guidelines as there is little to no explanation of what is meant beyond correct operation of the relays. Near the end of the first paragraph for the “Guidelines for Requirement R4,” the paragraph states that “Misoperation of UVLS equipment is addressed as a deficiency” in PRC-010. This seems to contradict the inclusion of all UVLS equipment installed to trip BES equipment in the PRC-004 applicability section where it is processed as a Misoperation. In the second paragraph of the response to the fourth FAQ, there is a statement that the definition of UVLS Program “does not explicitly note that the term excludes centrally controlled undervoltage-based load shedding.” To the contrary, the last sentence of UVLS program quite clearly excludes centrally controlled UVLS.

(3) As proposed, PRC-004 will apply to all UVLS relays that can trip BES Elements including those that are part of a UVLS program and those that are not part of a UVLS program. That latter category include the centrally controlled UVLS or UVLS installed to protect local areas or equipment. While application of PRC-004 to UVLS installed to protect local areas may be appropriate, it is not appropriate to include those that are part of a centrally controlled system as this would be considered a RAS to which PRC-016 would apply. In the “Guideline for UVLS Program Definition,” it is stated very clearly that a centrally controlled UVLS system is a RAS.

(4) The VSLs for PRC-010 R4 were not modified in response to the modification of the requirement. It is now possible to partially meet the main requirement within the associated time frame. The VSLs should reflect this.

Response:

The drafting team thanks you for your comments.

1) Concerning the duplication of effort between the proposed PRC-004-5 and PRC-010-2, the drafting team notes that PRC-004 requires the owners of UVLS to evaluate the relay when it trips a BES interrupting device. In PRC-010, the planners evaluate the performance of the UVLS Program with consideration whether the UVLS equipment operated or did not operate in accordance with the UVLS Program design.

2) The drafting team notes that PRC-004 requires the owners of UVLS to evaluate the relay when it trips a BES interrupting device. In PRC-010, the planners evaluate the performance of the UVLS Program with consideration whether the UVLS equipment operated or did not operate in accordance with the UVLS Program design.

3) UVLS that trips one or more BES Elements would be applicable to PRC-004. UVLS under PRC-010 is applicable to UVLS defined by a UVLS Program, which specifically excludes centrally controlled UVLS by definition. Centrally controlled UVLS is a Remedial Action Scheme (RAS) by the adopted definition. So, RAS standards would apply to centrally controlled UVLS. It is possible that UVLS that trips a BES Element to be included within a UVLS Program; however, this is expected to be rare.

4) The team contends that both 4.1 and 4.2 must be performed together to ensure an adequate assessment of the UVLS Program; therefore, the drafting team is not proposing a Violation Severity Level which accounts for partial performance.

Likes: 0

Dislikes: 0

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP

Selected Answer: Yes

Answer Comment: We agree that specific steps are needed to be taken to continuously improve the reliability of the Bulk Electric System (BES). The evaluating and documenting of the process helps to identify critical facilities (which could lead to Misoperations) and to ensure that the same issues doesn't reoccur on the system. Additionally, the documented information can be used to help develop and implement a Correction Action Plan (CAP) with accuracy when it's required. We would like to thank the drafting

team for making great efforts to address the industry’s needs.

Additionally, we would like to suggest to the drafting team to include the term ‘undervoltage-based load shedding’ to the definition of the Remedial Action Scheme for consistency. In the Compliance Assessment Approach Specifics Section (RSAW-PRC-010-2) R1...Note to Auditor, our interpretation is that the term ‘undervoltage-based load shedding’ is not a part of the UVLS Program and it states that this term falls under the NERC Glossary definition of Remedial Action Scheme (RAS). However if you go out to the NERC site, the current definition of Remedial Action Scheme (RAS) doesn’t not contain this particular term.

Response:

The drafting team thanks you for your comment and notes that revising the NERC Board of Trustees adopted definition of “Remedial Action Scheme” (RAS) is not with the scope of this project. A RAS currently addresses centrally controlled UVLS schemes. Also, the drafting team has deleted “-based” from undervoltage load shedding in the “Note to Auditor” for clarity. The change was made to the RSAW and submitted to NERC Compliance. Please note that RSAWs are not posted during the final ballot.

Likes:

0

Dislikes:

0

Daniela Hammons - CenterPoint Energy Houston Electric, LLC - 1 - TRE

Selected Answer:

Yes

Answer Comment:

(1) CenterPoint Energy agrees 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. However, the Company cannot support this draft of PRC-010-2 due to the current wording of Requirement R4.2.

(2) The drafting team proposes to add Requirement R4.2 to Requirement R4 in PRC-010 as follows: Each Planning Coordinator or Transmission Planner shall, within 12 calendar months of an event that resulted in a voltage excursion for which its UVLS Program was designed to operate, perform an assessment to evaluate: 4.1. Whether its UVLS Program resolved the undervoltage issues associated with the event, and 4.2. The performance (i.e., operation and non-operation) of the UVLS Program equipment. CenterPoint Energy believes a more relevant method to capture the essence of PRC-022 Requirements R1 and R1.5 is to revise Requirement R4.2 as follows: Whether the UVLS entity(ies) adhered to the UVLS Program specifications. With this revised wording for Requirement R4.2, the assessment required under Requirement R4 would address whether the UVLS Program resolved the undervoltage issue associated with the event and whether the UVLS entity or entities involved adhered to the established UVLS Program specifications. It would be obvious that the operation of the UVLS Program equipment performed adequately when the amount(s) of load shedding in a voltage excursion event meets the expected minimum amount(s) as specified in a UVLS Program. However, while an assessment (Requirement R4.1) may determine the voltage excursion event was resolved for the specific system conditions and specific contingency, the UVLS Program may have been developed for other system conditions and more severe contingencies. Therefore, the assessment (Requirement R4.2) must include whether the UVLS entity(ies) met the obligated amount of load shedding specified by the Planning Coordinator or Transmission Planner. With a large number of UVLS equipment components, it is possible that a small number may not operate (i.e., “non-operation”). Examples of UVLS equipment non-operation would include the following: equipment problems such as a defective trip coil in a distribution circuit breaker or a defective relay and distribution circuit breaker unavailability due to maintenance (routine preventive or corrective) or construction (breaker replacement or station expansion). A small number of non-operations are inconsequential if the amount(s) of load shedding meets Planning Coordinator or Transmission Planner expectations. Furthermore, any deficiencies identified by either the proposed Requirement R4.1 or the revised wording for Requirement R4.2 would result in a Corrective Action Plan under Requirement R5.

Response:

The drafting team thanks you for your comment.

1) See #2.

2) The proposed wording “whether the UVLS entity or entities involved adhered to the established UVLS Program specifications” places judgement on UVLS owners as to whether the entity complied with the Planning Coordinator or Transmission Planner specification. This concern is addressed by PRC-010, Requirement R2, which requires “[e]ach UVLS entity shall adhere to the UVLS Program specifications and implementation schedule determined by its Planning Coordinator or Transmission Planner associated with UVLS Program development per Requirement R1 or with any Corrective Action Plans per Requirement R5.”

The drafting team contends that post-event assessments are intended to assure the UVLS Program operated consistent with its design. The failure or Misoperation of one of more UVLS relays could occur, but should not impact the overall performance of the UVLS Program. The Planning Coordinator or Transmission Planner with the proposed PRC-010, Requirement R4, Part 4.2 is intended to ensure the assessment addresses the operation and non-operation of UVLS Program equipment according to the characteristics of the event. The assessment in Requirement R4 should reveal items suggested in the above comment examples could be valid reasons for lack of performance. Part 4.2 is intended to require the planner to assess issues provided in the comment examples, and more specifically any operation or non-operation of UVLS Program equipment.

Likes: 0

Dislikes: 0

Paul Shipps - Lakeland Electric - 6 -

Selected Answer: Yes

Answer Comment:**Response:****Likes:** 0**Dislikes:** 0

Sergio Banuelos - Tri-State G and T Association, Inc. - 1,3,5 - MRO,WECC

Selected Answer: Yes

Answer Comment:

Tri-State suggests changing the implementation plans for PRC-004-5 and PRC-010-2. They both use PRC-010-1 as a reference point even though it has not yet been approved by FERC and therefore has no definitive effective date. If PRC-010-1 doesn't get approved before these versions do then, according to the implementation plans, these versions will be effective the 1st day of the 1st calendar quarter after the standards get approved by FERC. The drafting team should edit the implementation plans to allow more time for entities to prepare for the effective date if that were the case. We would suggest some language stating that the standards will become effective on the 1st day of the 1st calendar quarter that is 12 months after approval which would be similar to the time provided in PRC-010-1.

Response:

The drafting team thanks you for your comment. NERC Legal aided the drafting team in constructing the Implementation Plan. It is constructed in a manner to allow the proposed PRC-010-2 to surpass PRC-010-1 and stand on its own, or become effective very soon after the approval of PRC-010-1. Also, not keying both standards off of PRC-010-2 approval could lead to an unintentional gap in enforcement. The drafting team contends

that an additional 12-month implementation beyond the previous versions is unnecessary.

Likes: 0

Dislikes: 0

Oshani Pathirane - Hydro One Networks, Inc. - 1 - NPCC

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Molly Devine - IDACORP - Idaho Power Company - 1 -

Selected Answer: No

Answer Comment: In PRC-004-5 Applicability section 4.2.3 I suggest using the phrase "Undervoltage Load Shedding (UVLS) Program equipment that is intended to trip one or more BES

Elements". This clarifies the equipment to be analyzed is part of a UVLS Program, which I believe is the intent.

Response:

The drafting team thanks you for your comment. The two proposed standards are constructed to address two different issues. The proposed PRC-004-5 is addressing UVLS that trip one or more BES Elements, which may include relays in a UVLS Program; however, if that is the case, it would expected to be rare. The proposed PRC-010-2 addresses UVLS Program equipment, which typically trips distribution equipment and would not be applicable to the proposed PRC-004-5.

Likes:

0

Dislikes:

0

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC

Selected Answer:

Yes

Answer Comment:

Response:

Likes:

0

Dislikes:

0

Terry Bilke - Midcontinent ISO, Inc. - 2 -

Selected Answer: Yes

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Bernard Johnson - Oglethorpe Power Corporation - 5 -

Selected Answer:

Answer Comment:

Response:

Likes: 0

Dislikes: 0

Additional Comments

Puget Sound Energy Karen Silverman

NERC Question: 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.

PSE Answer: No.

If modelled like PRC-006 (UFLS Program), PRC-010 could just govern design and documentation of UVLS Program mitigation of voltage instability, voltage collapse or Cascading impacting the Bulk Electric System. Misoperations and resulting CAPs could be covered under PRC-004-5. CAP Example #2 on Page 25 of PRC-010 should be included in PRC-004-5

Response: The drafting team thanks you for your comment. Entities that experience an operation of the UVLS equipment that trip one or more BES Elements (irrespective of a voltage excursion) must address reviews in a shorter time (PRC-004). Likewise, planners will assess the performance of the UVLS Program following an event that resulted in a voltage excursion for which its UVLS Program was designed to operate. The assessment determines whether the UVLS equipment operated according to the design of the program, which will include the operation or non-operation of any UVLS equipment within the program.

The following addresses the timing between the proposed PRC-004-5 and PRC-010-2.


For an event that resulted in a voltage excursion for which its UVLS Program was designed to operate, it is acceptable for an applicable entity under the proposed PRC-004-5 to begin reviewing the operation. If the entity determines a Misoperation occurred, it may develop a Corrective Action Plan (CAP). Developing the CAP and correcting the Misoperation could occur in advance of the assessment conducted by the Planning Coordinator (PC) or Transmission Planner (TP) under the proposed PRC-010-2. The drafting

team would anticipate the applicable entity under PRC-004 to communicate their findings; therefore, the PC or TP would account for the findings during the post event assessment.

The drafting team does not believe adding the Example #2 (Page 18 of 33) to the proposed PRC-004-5 add any benefit because there are similar examples regarding the CAP.



Hydro One Networks
Paul Malozewski
Oshani Pathirane

Hot Answers

 **A: N/A**

Paul Malozewski, Hydro One Networks, Inc., 3, 4/7/2015

[Hydro One Comment on Project 2008-02.2.docx](#)

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Hydro One supports the following comment already submitted by the TFSP: “ the addition to the Facilities Section, bullet 4.2.3 “Undervoltage load shedding (UVLS) that is intended to trip one or more BES Elements” does not appear to be necessary. The BES definition excludes elements that serve radial load. UVLS schemes are normally intended to trip loads which are supplied by circuits (feeders). These circuits (feeders) would


not normally be included in the BES definition. It may be helpful for the draft team to include an example in the application guideline to provide greater clarity”.

Response: With regard to the comment about radial lines, the applicability in the proposed PRC-004-5 addresses the potential for the existence of UVLS that trip one or more BES Elements today, or in the future. For example, if a change were to occur in the BES definition, UVLS equipment would be properly addressed to avoid a gap in reliability. The drafting team believes the distinction is clear and an example is not necessary.

 A: N/A

Oshani Pathirane, **On Behalf of:** Hydro One Networks, Inc., NPCC, Segments 1

[Hydro One's additional comments on Project 2008-02.2.docx](#)

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Part 4.2 is specific to all devices not just BES as required under PRC-004. It puts the onus on the RC/TP to assess the success of the program if ever called upon to work. It is different than the PRC-004 requirement.

Response: Concerning the duplication of effort between the proposed PRC-004-5 and PRC-010-2, the drafting team notes that PRC-004 requires the owners of UVLS to evaluate the relay when it trips a BES interrupting device. In PRC-010, the planners evaluate the performance of the UVLS Program with consideration whether the UVLS equipment operated or did not operate in accordance with the UVLS Program design.

For an event that resulted in a voltage excursion for which its UVLS Program was designed to operate, it is acceptable for an applicable entity under the proposed PRC-004-5 to begin reviewing the operation. If the entity determines a Misoperation occurred, it may develop a Corrective Action Plan (CAP). Developing the CAP and correcting the Misoperation could occur in advance of the assessment conducted by the Planning Coordinator (PC) or Transmission Planner (TP) under the proposed PRC-010-2. The drafting

team would anticipate the applicable entity under PRC-004 to communicate their findings; therefore, the PC or TP would account for the findings during the post event assessment.

Southwest Power Pool
Charles Yeung

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:

1. In PRC-10, the applicable entities defines "UVLS entities" as those Transmission Owners with UVLS equipment. However, R1.2, requires PCs and TPs to consider the generator ride-through capabilities in their UVLS program studies. Generator data is needed from Generator Owners. These should be applicable entities to PRC-010 as well.

We agree that the Misoperation identification and correction of UVLS equipment, as retired by PRC-022-1, Requirements R1 and R1.5, are 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 redundant efforts regarding evaluation of the proper operations and misoperations of UVLS equipment. More specifically, 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. The addition of 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 to the efforts of the UVLS entities. Further, as the UVLS entities are the entities that actually operate, control, and maintain the UVLS

equipment, such entities would be in the best position to perform a thorough evaluation of the operation or misoperation of such equipment. The SRC, therefore, proposes that Part 4.2 in PRC-010-2 be removed or revised to remove redundancy and ensure that the most appropriate entity is performing such assessments. Should the SDT recommend that an independent review of such assessments and corrective actions occur, such could be considered in the context of Part 4.2

Response: The drafting team thanks you for your comment. Entities that experience an operation of the UVLS equipment that trip one or more BES Elements (irrespective of a voltage excursion) must address reviews in a shorter time (PRC-004). Likewise, planners will assess the performance of the UVLS Program following an event that resulted in a voltage excursion for which its UVLS Program was designed to operate. The assessment determines whether the UVLS equipment operated according to the design of the program, which will include the operation or non-operation of any UVLS equipment within the program.

The following addresses the timing between the proposed PRC-004-5 and PRC-010-2.

For an event that resulted in a voltage excursion for which its UVLS Program was designed to operate, it is acceptable for an applicable entity under the proposed PRC-004-5 to begin reviewing the operation. If the entity determines a Misoperation occurred, it may develop a Corrective Action Plan (CAP). Developing the CAP and correcting the Misoperation could occur in advance of the assessment conducted by the Planning Coordinator (PC) or Transmission Planner (TP) under the proposed PRC-010-2. The drafting team would anticipate the applicable entity under PRC-004 to communicate their findings; therefore, the PC or TP would account for the findings during the post event assessment.