

**Individual or group. (25 Responses)**

**Name (15 Responses)**

**Organization (15 Responses)**

**Group Name (10 Responses)**

**Lead Contact (10 Responses)**

**IF YOU WISH TO EXPRESS SUPPORT FOR ANOTHER ENTITY'S COMMENTS WITHOUT ENTERING ANY ADDITIONAL COMMENTS, YOU MAY DO SO HERE. (0 Responses)**

**Comments (25 Responses)**

**Question 1 (23 Responses)**

**Question 1 Comments (25 Responses)**

**Question 2 (24 Responses)**

**Question 2 Comments (25 Responses)**

**Question 3 (24 Responses)**

**Question 3 Comments (25 Responses)**

**Question 3 (25 Responses)**

**Question 4 Comments (25 Responses)**

**Question 3 (25 Responses)**

**Question 5 Comments (25 Responses)**

Individual
William H. Chambliss
Virginia State Corporation Commission, member OC
No
The logic for excluding ALL centrally-controlled undervoltage load shedding appears weak. All such programs are excluded because some MAY either use voltage inputs from various locations or use inputs other than voltages in their logic. It seems more reasonable to exclude only those centrally controlled undervoltage shedding that POSITIVELY fits either of the above characteristics, rather than excluding all because some MAY fit either.
Yes
Yes
Yes
It is unclear who is included in the term "UVLS entity" in R2. This should be a defined term.
Yes
Although I believe certain wording changes could improve the standard, I generally support it.
Individual
Thomas Foltz

American Electric Power
No
The proposed definition for Undervoltage Load Shedding Program makes no distinction between UVLS devices implemented on Distribution feeder circuits and BES (100kV and above) circuits. The previous PRC-021-1 only applied to UVLS programs used “to mitigate the risk of voltage collapse or voltage instability in the *BES*” (emphasis added). Please clarify whether or not the proposed definition applies only to the BES.
Yes
Yes
Yes
The drafting team stated in the Mapping Document their intention for PRC-004-3 to address UVLS Program Misoperations. We believe that it is clearer and more concise that the requirement for UVLS Program Misoperations be contained together with other UVLS related requirements within PRC-010-1 rather than be split separately between PRC-004-3 and PRC-010-1. In addition, referencing our comments in question 1, the proposed requirements in PRC-004-3 only include BES Misoperations while the proposed PRC-010-1 standard makes no distinction between BES and non-BES devices. We believe that this discrepancy needs to be addressed and clarified.
No
Further clarification is needed before AEP can determine whether it can support the proposed standard.
Individual
Amy Casuscelli
Xcel Energy Inc.
Yes
Yes
No
In R5, it is unclear which assessment is being referenced – is it the one performed in R3, in R4, or both? Please consider making the reference more specific. Also in R5, it is unclear how “within three calendar months of identification (of deficiencies)” can be measured? It appears to require the TP/PC to record the date the deficiencies were identified during the performance of assessment -- if this is indeed the intent, recording this milestone date is not captured in R3 or R4. Suggest the milestone date be changed to completion of assessment date. We suggest the following changes in R5 to address both concerns: R5. Each Planning

Coordinator or Transmission Planner that identifies deficiencies in its UVLS Program during an assessment [performed in either R3 or R4] shall develop a Corrective Action Plan (CAP) to address the deficiencies within three calendar months of [completing the assessment].

No

Yes

Good improvements and clarifications in the standard, and most importantly in the defined term “UVLS Program” by making a clear distinction with respect to SPS.

Individual

Ayesha Sabouba

Hydro One

No

The “distributed” attribute needs clarification. Often in one geographic region there are multiple UVLS schemes that are totally independent from each other and individually respond to various contingencies. Although there is always a possibility that one severe contingency would trigger two or more of these schemes, this by itself should not make the collection of UVLS schemes a “distributed” UVLS Program. When multiple UVLS schemes are armed in one region, even if one of them fails to shed its load in response to a severe contingency, the others will respond and the failure of one UVLS scheme will impact only its “contained area”. Is the proposed standard requiring the assessment of the simultaneous failure of all independent UVLS schemes in the region, or failure of only one of those schemes, to determine if there is “Adverse Reliability Impact outside this contained area”?

Yes

Yes

Yes

Requirement R6 could be removed since in the new MOD-032 the PC is required to specify all data and models needed for assessment of reliability of the system and the affected entities are required to provide those data and models to the PC. These will cover the UVLS data as well.

No

More clarity is needed for deciding which UVLS schemes are “UVLS Program”. Please see the answer to Q1 above regarding the “distributed” attribute and deciding when there could be adverse reliability impact outside contained area for multiple (e.g., five or six) independent UVLS schemes in one part of the system. One suggestion is to remove the “distributed” attribute (and even the term “Program”) and instead make the requirements of this standard applicable to those UVLS schemes that individually or collectively are needed for compliance with the performance requirements of TPL-001-4. This would be consistent with what is

proposed for SPS definition (and Type). Note that Page 18 has reference to “(TPL category C Contingency)” which needs to be updated to the categories in TPL-001-4.

Individual

Michael Falvo

Independent Electricity System Operator

Yes

No

We agree with the entities presented in Section A 4.1, but do not agree with the exclusion of Transmission Operator. While Section 4.1.3 includes Transmission Owner as an Undervoltage load shedding (UVLS) entities, not all TOs are responsible for the operation or control of UVLS equipment. Where a TO delegates such responsibilities to the TOP, or where the TO and TOP are separate organizations, the TO will not have such responsibilities. We suggest to add TOP to the Applicability Section.

No

We generally agree with R1, R2 and R4, but do have the following concerns with Requirements R3 and R5. R3: The phrase “or operating conditions” is very vague. There are definitely “material changes” to the operating conditions yearly, monthly, weekly and even daily. At a minimum, the dispatch scenarios will be different every day, week, month and year. Do these changes constitute material changes to the operating conditions? If so, then the effectiveness of each existing UVLS Program needs to be assessed very frequently. If no, then what constitutes “material changes to the operating conditions”? We suggest to remove the phrase “or operating conditions”. A review of the UVLS program once every 60 months or as material changes are made to system topology will suffice. R5: It is unclear whether or not the identified deficiencies are the results of the evaluations made in R3 and R4. This needs to be clarified, or else there need to be triggering events clearly stated in R5. Further, R5 requires the development of a CAP in 3 months, but does not require the implementation of the CAP, and the time frame. Both need to be added.

Yes

We offer the following comments on Requirements R6, R7 and R8 for consideration: R6: We question the need for R6. Given that R2 requires the UVLS entity to adhere to the UVLS Program specifications and implementation schedule determined by its Planning Coordinator or Transmission Planner, without exception, wouldn't the PC and TP already have the information on their respective data base? We suggest to remove R6. R7: For the same reason stated in the comment on R6, above, R7 is not required and should be removed. Even if this requirement is retained, the database update to support modeling needs only to be performed as the UVLS program is revised following the identification in R3, R4 and the implementation of the CAP in R5, not annually. R8: The UVLS program data base may be required by other entities that need to consider UVLS operations in a PC's area, such as the TOPs that developed SOLs and RCs that develop IROLs. The impacts of UVLS operations and

their settings need to be considered and modeled in the SOL/ITOL development. Please expand this requirement to include “and those entities that have a reliability need for the database.”

No

To put us in favor of the standard, the comments/concerns expressed under Q3 and Q4, above, will need to be address. And where changes are not made to address these concerns, the rationale for not making changes should be provided. There are no specific questions on the Measures, Retention requirements, VRFs and VSLs so we have elected not to review them at this time to provide comments. Further, since we do not agree with a number of requirements, commenting on the compliance elements including VRFs and VSLs is perhaps premature at this time. We will provide comment when the revised draft standard is posted for formal commenting.

Group

Colorado Springs Utilities

Kaleb Brimhall

Yes

Yes

Yes

Is WECC looking to organize and coordinate UVLS Programs within the overall WECC region?

No

Yes

Group

MRO NERC Standards Review Forum

Joe DePoorter

Yes

Yes

Yes

Yes

Please consider these suggestions. Modify the standard title to qualify that the standard applies to “Automatic Undervoltage Load Shedding” similar to the title of the ‘Automatic

Underfrequency Load Shedding Standard (PRC-006-1). This change would readily indicate that the standard does not include manual undervoltage load shedding, which is presently covered by EOP-003-2 (Loading Shedding Plans) standard and will continue to be covered by the future revision of standard EOP-011-1 when the automatic UVLS program requirements are removed. Modify the Purpose to qualify that the standard applies to automatic UVLS Programs used to mitigate the risk of BES Adverse Reliability Impacts due to undervoltage conditions with wording like, “. . . reliable operation of automatic Undervoltage Load Shedding (UVLS) Programs that are used to mitigate the risk of BES Adverse Reliability Impacts due to undervoltage conditions”. Move specific wording from the guidelines which aren't mandatory into the NERC standard itself to clarify that the standard by itself does not require a mandatory UVLS program, rather if an entity has UVLS systems, (i.e. groups of relays set to open for to maintain BES system voltages and not individual UVLS relays protecting individual transmission lines) that meet the NERC standard, those systems are in-scope.

No

The proposed standard is very good. However, making changes to the standard that address the comments made above in an acceptable manner would be needed to put us in favor of the planned revision to the existing standards.

Group

Arizona Public Service Company

Janet Smith

Yes

Yes

No

For a UVLS developed as a safety net, any event that would trigger the necessary voltage excursion to trigger the UVLS program would be very significant. The analysis of the event, including evaluation of UVLS would likely take a minimum of a year. Has the drafting team considered the process involved in analyzing an event such as the Northeast Blackout and how the analysis of a safety net (had one been employed) would have impacted the overall analysis timeframe? In addition, APS has concerns that any additional analysis needed to identify effectiveness improvements would likely take more than three months. APS would like clarification that the three month time period given only refers to the development of the Corrective Action Program (CAP) milestones, and not the development and actual completion of these milestones within that 3 month period.

Yes

No

APS would like to see more detail as to what is required to demonstrate effectiveness and coordination as it relates to UVLS safety nets developed to protect from unforeseen multiple

Contingencies. APS would also like to see consideration of the time lines suggested by the drafting team to analyze UVLS effectiveness and to develop corrective action plans after a voltage excursion again specifically as it relates to safety net UVLS program that would not initiate except during an extreme event.

Individual

Dan Inman

Minnkota Power Cooperative

Yes

Minnkota Power Cooperative believes the definition and the enforceable standard should match the intent expressed in the guidelines. The guidelines express a specific criteria for wide-area issues (“wide-area voltage collapse” and “wide-area voltage undervoltage problems”). MPC supports this wide area criteria and suggest applying the criteria outlined in guidance to the definition for UVLS Programs. Undervoltage Load Shedding Program (UVLS Program): An automatic load shedding program consisting of distributed relays and controls used to mitigate the risk of Cascading, voltage instability, wide-area voltage collapse, or uncontrolled separation resulting from wide-area undervoltage conditions. Centrally-controlled undervoltage-based load shedding is not included.

Yes

Yes

Yes

Yes

Individual

Trevor Schultz

Idaho Power Company

No

I suggest adding the words “wide area” prior to the words “voltage collapse” in the UVLS Program definition. It seems the SDT’s intent is to exclude UVLS systems used to mitigate the risk of “local” voltage collapse, as illustrated by the “Radial BES Subsystem” example in the PRC-010-1 Application Guidelines – in fact, the phrase “wide area voltage collapse” is used in the verbiage of this example. As the UVLS definition currently reads, it could be interpreted to include UVLS schemes implemented with the purpose of preventing local “voltage collapse”, such as the scheme described in the Application Guidelines example.

Yes

Yes
No
No
I would support the proposed standard once I am assured the definition of UVLS Program provides adequate clarity to understand which schemes apply to the standard.
Group
Northeast Power Coordinating Council
Guy Zito
No
The “distributed” attribute needs clarification. Often in one geographic region there are multiple UVLS schemes that are totally independent from each other and individually respond to various contingencies. Although there is always a possibility that one severe contingency would trigger two or more of these schemes, this by itself should not make the collection of UVLS schemes a “distributed” UVLS Program. When multiple UVLS schemes are armed in one region, even if one of them fails to shed its load in response to a severe contingency, the others will respond and the failure of one UVLS scheme will impact only its “contained area”. Is the proposed standard requiring the assessment of the simultaneous failure of all independent UVLS schemes in the region, or failure of only one of those schemes, to determine if there is “Adverse Reliability Impact outside this contained area”?
No
We agree with the entities presented in Section A 4.1, but do not agree with the exclusion of Transmission Operator. While Section 4.1.3 includes Transmission Owner as an Undervoltage load shedding (UVLS) entities, not all TOs are responsible for the operation or control of UVLS equipment. Where a TO delegates such responsibilities to the TOP, or where the TO and TOP are separate organizations, the TO will not have such responsibilities. Suggest adding TOP to the Applicability Section.
No
We agree with R1, and R4, but do have the following concerns with Requirements R3 and R5. In Requirement R3 the phrase “or operating conditions” is very vague. There are continuous and ongoing “material changes” to operating conditions. At a minimum, the dispatch scenarios will be different every day, week, month and year. Do these changes constitute material changes to the operating conditions? If so, then the effectiveness of each existing UVLS Program needs to be assessed very frequently. If no, then what constitutes “material changes to the operating conditions”? Suggest removing “or operating conditions”. A review of the UVLS program once every 60 months or as material changes are made to system topology is sufficient. In Requirement R5 it is unclear whether or not the identified deficiencies are the results of the evaluations made in R3 and R4. This needs to be clarified, or else there need to be triggering events clearly stated in R5. Further, R5 requires the

development of a CAP in 3 months, but does not require the implementation of the CAP, and the time frame. Both need to be added.

Yes

Requirement R6 could be removed. In the new MOD-032 the PC is required to specify all data and models needed for assessment of reliability of the system, and the affected entities are required to provide those data and models to the PC. This will cover the UVLS data as well. Also, given that Requirement R2 requires the UVLS entity to adhere to the UVLS Program specifications and implementation schedule determined by its Planning Coordinator or Transmission Planner, without exception, wouldn't the PC and TP already have the information on their respective data base? Regarding Requirement R7, for the same reason as stated above for Requirement R6, Requirement R7 is not required and should be removed. Even if this requirement is retained, the database update to support modeling needs only to be performed as the UVLS program is revised following the identification in R3, R4 and the implementation of the CAP in Requirement R5, not annually. For Requirement R8, the UVLS program data base may be required by other entities that need to consider UVLS operations in a PC's area, such as the TOPs that developed SOLs and RCs that develop IROLs. The impacts of UVLS operations and their settings need to be considered and modeled in the SOL/IROL development. Please expand this requirement to include "and those entities that have a reliability need for the database."

No

More clarity is needed for deciding which UVLS schemes are "UVLS Program". Please see the response to Q1 above regarding the "distributed" attribute and deciding when there could be adverse reliability impact outside contained area for multiple (e.g., five or six) independent UVLS schemes in one part of the system. One suggestion is to remove the "distributed" attribute (and even the term "Program") and instead make the requirements of this standard applicable to those UVLS schemes that individually or collectively are needed for compliance with the performance requirements of TPL-001-4. This would be consistent with what is proposed for SPS definition (and Type). Note that Page 18 makes reference to "(TPL category C Contingency)" which needs to be updated to the categories in TPL-001-4.

Group

Duke Energy

Colby Bellville

Yes

Yes

Yes

R1: No comment R3: Duke Energy requests clarification from the SDT on the intent of the "material change" aspect of the proposed requirement. Is it the SDT's intent to have the

individual entity set its own criteria as to what constitutes a “material change”? R4: No comment R5: No comment
Yes
R7: Duke Energy suggests that the SDT consider re-wording R7 to the following: “Each Planning Coordinator that has a UVLS program in its area shall update a database containing data necessary to model its UVLS program for use in event analyses and assessments of the UVLS program as needed, or at least once every calendar year.” The addition of the phrase “as needed”, provides for a Planning Coordinator to update a UVLS program when necessary to ensure for the most current model availability.
Yes
Duke Energy’s support for the proposed PRC-010-1 is contingent upon the absolute inclusion of Centrally-controlled undervoltage-based load shedding in the definition of Special Protection System (Project 2010-05.2 Protection Systems).
Individual
Anthony Jablonski
ReliabilityFirst
No
ReliabilityFirst provides the following comments for considerations: 1. Requirement R1 - ReliabilityFirst requests clarification on why Requirement R1 is applicable to both the Planning Coordinator and Transmission Planner? In the scenario where the Planning Coordinator has an UVLS program, it would be counterintuitive for a Transmission Planner within the Planning Coordinator’s area to have an UVLS program as well. ReliabilityFirst recommends structuring this standard in the same fashion as the NERC PRC-006-1 (UFLS) Standard and remove the Transmission Planner as an Applicable Entity within the standard. If the Planning Coordinator and Transmission Planner are included based on differences within Regional Entity footprints, ReliabilityFirst recommends including a Regional Variance for these specific instances. 2. Requirements R6 and R7 - If Requirements R1, R3, R4 and R5 continue to apply to the Transmission Planner (based on our previous comment), ReliabilityFirst requests clarification on why the UVLS Entities are not required to provide data to the Transmission Planners (R6) and why the Transmission Planners are not required to update the UVLS database (R7).
Yes
ReliabilityFirst provides the following comments for considerations: 1. Requirement R1, Part 1.2 - ReliabilityFirst believes the term “coordination” by itself is ambiguous and needs further clarification to avoid confusion. ReliabilityFirst recommends the following for consideration: “The UVLS Program is [validated] through coordination [of Protection Systems] with generator voltage...” 2. Requirement R2 - Requirement R2 requires the UVLS entity to adhere to the Planning Coordinator and Transmission Planner implementation schedule though there is no corresponding requirement for the PC or TP to provide such a schedule. If the Planning

Coordinator or Transmission Planner never provides such a schedule, there is a potential for the UVLS entity to be non-compliant. Once again ReliabilityFirst recommends the following similar structure of the NERC PRC-006-1 Standard and include the addition of a new requirement in this standard, such as “Each Planning Coordinator or Transmission Planner shall notify the UVLS Entities of the UVLS Program specifications and implementation schedule.” 3. Requirement R3 - ReliabilityFirst recommends removing the term “comprehensive” since it adds little or no value to the requirement. The term is ambiguous and the meaning may have potential differing interpretations by the parties involved. 4. Requirement R3, Part 1.3 - ReliabilityFirst believes the term “coordination” by itself is ambiguous and needs further clarification to avoid confusion. ReliabilityFirst recommends the following for consideration “The UVLS Program is [validated] through [protected device] coordination with generator voltage...”

No

ReliabilityFirst believes the comments submitted via the preceding questions need to be addressed before the standard is ready for approval.

Individual

Andrew Z. Puztai

American Transmission Company, LLC

No

ATC asks the SDT please consider the following modification of the proposed UVLS Definition to qualify that these are programs that are developed by the Planning Coordinator or the Transmission Planner and not temporary schemes that are developed by the Transmission Operator: ATC recommends revising the definition as follows: “Undervoltage Load Shedding Program (UVLS Program): An automatic load shedding program developed by the Planning Coordinator or Transmission Planner consisting of distributed relays and controls used to mitigate the risk of Cascading, voltage instability, voltage collapse, or uncontrolled separation resulting from undervoltage conditions. Centrally controlled undervoltage based load shedding is not included.”

Yes

Yes

Yes

ATC asks that the SDT please consider the following recommendations: 1. Modify the PRC-010-1 standard title to qualify that the standard applies to “Automatic Undervoltage Load Shedding” similar to the title of the ‘Automatic Underfrequency Load Shedding Standard (PRC-006-1). This change would readily indicate that the standard does not include manual undervoltage load shedding, which is presently covered by EOP-003-2 (Loading Shedding Plans) standard and will continue to be covered by the future revision of standard (EOP-003-3) when the automatic UVLS program requirements are removed. 2. Modify the Purpose to

qualify that the standard – (1) applies to automatic UVLS Programs, (2) does not apply to the situation of when an automatic voltage load shedding scheme is developed and implemented by the Transmission Operator for Operations Planning Time Horizon, and (3) to limit the applicability to mitigating the risk of BES Adverse Reliability Impacts due to undervoltage conditions. Consider changing the wording of the Purpose as follows: “To establish an integrated and coordinated approach to the design, evaluation, and reliable operation of automatic Undervoltage Load Shedding (UVLS) Programs that are used to meet the NERC Transmission Planning performance requirements and mitigate the risk of BES Adverse Reliability Impacts due to undervoltage conditions”.

Yes

The proposed standard is very good, however, addressing the comments made above are recommended for ATC to be in favor of the planned revision to the existing standards.

Individual

Gul Khan

Oncor Electric Delivery LLC

Yes

Yes

Yes

Yes

Yes

Individual

Catherine Wesley

PJM Interconnection

No

The drafting team did not address, in this posting, PJM’s comment regarding the term “localized” which is not a defined term. The term potentially could be interpreted differently by auditors and the applicable functional entities. The term needs to be defined clearly to eliminate ambiguity. Additionally, PJM did not find a reference or explanation for our recommendation posted in the Consideration of Comments that were developed for industry comments submitted in October, 2013. PJM would appreciate understanding the drafting team’s decision not to provided clarity for this term.

Yes

No

PJM supports the SRC’s response to this question. We reiterate their comments as follows: • R1 is missing specific wording and needs to specify the requirement to implement the UVLS program. • R3 & R5 should be clarified with language so that they only apply to “operating conditions that impact the performance of UVLS”. • R5 is unclear as to which “assessment” is referred to? The assessment per R3? For R4? Or for both? • R5 needs additional language in the requirement for the entity to not only develop but also to implement the CAP.

Yes

While PJM does support the standard, we included the following comment during the previous posting in October, 2013: The PJM Regional Transmission Expansion Plan designs the PJM RTO system to avoid the need for UVLS and therefore PJM does not have a UVLS program. The standard needs to address the situation when the TP/PC does not have a UVLS program but the UVLS entity has their own UVLS schemes. The concepts contained within PRC-010-0 R1 should be incorporated within the new standard to ensure that individual UVLS entity schemes that are developed outside or in lieu of a TP/PC program are coordinated with their TP/PC. PJM would appreciate the drafting team’s response to our concern.

Yes

Group

Florida Power & Light

Mike O'Neil

Yes

Yes

No

The rationale for R1 states that lack of coordination for UVLS is a key risk to the reliability of the BES. This premise is not supported by the August 14 2003 blackout or other events. UVLS was cited as a possible measure that could have mitigated the event had there been UVLS relays near the portions of the grid that experienced voltage collapse. Coordination problems are not demonstrated by the Blackout because the UVLS relays did not exist. The requirement to “demonstrate coordination” is extremely poor practice in Reliability Standard as it is inherently subjective and misinterpreted by auditors. Low voltage problems due the severe multiple contingencies tend to be focused on a local area due to the impedance of the transmission system. The need for any coordination depends on the area affected by the event and is best left up to the Transmission Planner. Generator low voltage ride through on existing generators is generally a function of the auxiliary bus design, the auxiliary bus loading conditions and the characteristic of equipment such as pump motors. Low voltage ride through is not a relay setting that can be looked up and is extremely difficult to determine without performing a load threatening staged test. NERC should be trying to encourage the

installation of UFLS relays. Many UVLS relays are engineered and justified based on Category D Extreme Events for which there is no transmission performance requirement. When planning studies demonstrate a benefit to the application of UFLS relays, Transmission Planners have ample motivation to develop a reliable scheme not prone to undesired load shedding. Imposing requirements that are difficult to demonstrate to an auditor are an impediment to more widespread application of UVLS and may lead some Planners to remove UVLS from service if they perceive a compliance risk.

No

Yes

Group

ACES Standards Collaborators

Jason Marshall

No

The combination of the definition, rationale boxes and application guidelines provide excellent description, clarification and support for which types of UVLS relays the standard is applicable. However, we would like further clarification regarding the inconsistencies between UVLS Program definition and the application guidelines that could lead to varying compliance outcomes. For instance, the application guidelines are clear on page 18 that the UVLS Program would apply to wide area voltage collapse. Given that NERC has defined wide area to include the entire reliability coordinator area, one could infer that wide area voltage collapse would exceed the area beyond a single BA. However, the actual definition of UVLS Program only includes voltage collapse which could include a local, small area voltage collapse. The example provided on page 18 makes clear that this is not the drafting team intent. However, FERC does not approve application guidelines. The Commission only approves definitions and requirements with only the requirements becoming enforceable. Thus, this could lead to inconsistent compliance outcomes. We support that concept of UVLS Program applying to a wide area voltage collapse. To remedy this issue, we recommend modifying the UVLS Program definition to include "Wide Area" before voltage collapse which is a NERC defined term that includes the entire RC Area as well as the critical flow and status information from adjacent RC Areas as determined by detailed system studies to allow the calculation of IROLs.

No

We support the concept of the delineation that the drafting team has described in the rationale box for the PC and TP. Furthermore, we support that requirements R7 and R8 are only applicable to the PC since they will develop the models for all of the TPs in their area. However, we think implementation of other requirements such as R1 should also identify only one function because it leads to confusion. The rationale box explains that the expectation is that only one of the two entities needs to develop the UVLS program. As the requirements

are written, the practical compliance application does not support the concept. While we understand the rationale box supports that both entities do not have to perform the action, a compliance auditor will ask PCs and TPs if they have UVLS Programs in their areas and expect them to show that they have completed studies and assessments to demonstrate its effectiveness per R1. The requirement applies to both and the PC or TP will not be given a “compliance pass” because they said the other has responsibility. The drafting team should work with NERC compliance staff to craft the requirements and RSAW to reflect the concept expressed in the applicability section of the compliance report.

No

(1) We are generally supportive of the approaches taken, but we do have some concerns with a few specific requirements. Requirement R1, Part 1.2 and Requirement R3, Part 3.2 of the standard need to be clarified to state that the UVLS program should be integrated with generator voltage-ride through capabilities for generators that are expected to be in-service during the actuation of the UVLS relays. UVLS Programs may be installed in areas with limited generation capabilities which result in limited reactive support. Thus, the tripping of one or more these generators in a load pocket may be ultimately what results in the need for the UVLS Program. If the area has a single generator that provides the voltage support and its loss is what ultimately triggers UVLS actuation, then why would the UVLS Program need to be coordinated with generator voltage ride-through capabilities? Please modify Parts 1.2 and 3.2 to recognize that if a unit contingency is ultimately what triggers the UVLS scheme that the UVLS Program does not need to be coordinated with the generator voltage-ride through capabilities for this standard.

Yes

(1) There appears to be inconsistency in the stated coordination between this project and the Project 2010-05.2 Special Protection Systems. Page 6 of proposed PRC-010-1 states that the definition of SPS as written in Project 2010-05.2 Special Protection Systems (SPS) will be adjusted to include only centrally-controlled UVLS. However, the recently posted definition of SPS did not reflect this. In fact, the definition explicitly excluded UVLS in bullet a) of the definition. We do support the concept that centrally-controlled UVLS schemes should be covered under the SPS standards and believe further coordination is required between the two drafting teams. (2) Requirement R8 appears to meet Paragraph 81 criteria and should be removed because it is administrative in nature. More specifically, it meets criterion B4 – Reporting because it requires reporting to third parties and does not have a discernible impact on reliability. Consider if the requirement did not exist. Is it likely that the Planning Coordinator would not share their information with another Planning Coordinator? The answer is that the PC would share because Parts 1.2 and 3.2 already require that PCs to coordinate with other UVLS Programs, which creates an implied requirement to share. Furthermore, PCs are already used to sharing information and data such as planning models through regional model building processes so sharing additional pertinent information is not a significant challenge. (3) We are concerned that requirements R4 and R5 potentially overlap with PRC-004-2.1a and may be inconsistent. The definition of Protection System and maintenance tables in PRC-005-2 make clear that distributed UVLS systems are considered Protection Systems and, thus, subject to PRC-004-2.1a. PRC-004-2.1a requires that the TO and

DP evaluate their Protection Systems Misoperations including UVLS relays Misoperations and to develop Corrective Action Plans. This would require the evaluation of all UVLS operations to ensure they are either correct or a Misoperation. R4 and R5 of PRC-010-1 would appear to require a similar analysis and development of Corrective Action Plans with specific time lines. PRC-004-2.1a does not contain specific time lines so the inclusion of specific times in PRC-010-1 R4 and R5 could cause confusion and be viewed to be in conflict. We recommend removal of PRC-010-1 R4 and R5 since they are already covered under PRC-004-2.1a. Redundant requirements also meet Paragraph 81 criteria.

No

We support the concept of the standard but believe there are still a few outstanding issues described in our comments to other questions that are required before we can support the standard. Thanks for the opportunity to comment.

Individual

Bill Temple

Northeast Utilities

No

The definition is not clear enough to determine what is a "UVLS Program". The "distributed" attribute needs clarification. Often in one geographic region there are multiple UVLS schemes that are totally independent from each other and individually respond to various contingencies. Although there is always a possibility that one severe contingency would trigger two or more of these schemes, this by itself should not make the collection of UVLS schemes a "distributed" UVLS Program. The definition would become more clear if the clarification on page 18 (second paragraph) of the standard (Application Guide) is applied to the definition. The suggested definition for the "Undervoltage Load Shedding Program (UVLS Program)" based on the clarification of page 18 of the standard (application guide section) should be: "An automatic load shedding scheme that is used to mitigate the risk of Cascading, voltage instability, voltage collapse, or uncontrolled separation resulting from undervoltage conditions, within and outside of the local contained area".

No

Yes

No

No

More clarity is needed in deciding which UVLS schemes are "UVLS Program". Please see the answer to Q1 above regarding the "distributed" attribute and deciding when there could be adverse reliability impact outside contained area for multiple (e.g., five or six) independent UVLS schemes in one part of the system. One suggestion is to remove the "distributed" attribute and instead make the requirements of this standard applicable to those UVLS

schemes that individually or collectively are needed to mitigate Adverse Reliability Impacts within and outside of the local contained area. (Refer to last paragraph of page 18 of the draft standard). Note that Page 18 has reference to “(TPL category C Contingency)” which needs to be updated to the categories in TPL-001-4. Applicability: There are numerous instances where the standard often refers to “either the Planning Coordinator or Transmission Planner” is responsible for a requirement (Requirements R1, R3, R4 and R5). To streamline the process and make the standard clearer as to who is responsible for what requirement there should be an additional requirement in the standard (most probably the first requirement) that should direct the Planning Coordinator and Transmission Planner to come to an agreement as to who should be responsible for which of these requirements, similarly to Requirement R7 of TPL-001-4. It is not apparent from the standard whether the standard applies to only the BES or both BES and non-BES parts of the system. The applicability section also refers to Distribution Providers which suggests that the standard also applies to the non-BES portions of the system. The portions of the power system that the standard applies to should be clearly defined.

Individual

John Pearson

ISO New England

No

The standard defines an Undervoltage Load Shedding Program (UVLS Program) as “An automatic load shedding program consisting of distributed relays and controls used to mitigate the risk of Cascading, voltage instability, voltage collapse, or uncontrolled separation resulting from undervoltage conditions. Centrally-controlled undervoltage-based load shedding is not included. Comment: The term distributed needs additional clarification. Often in a geographic region there are multiple UVLS schemes that are totally independent of one another and respond individually to various contingencies. These schemes are local to the area. A program would consist of a coordinated group of relays designed to manage voltage issues over a wide area of the power system.

Yes

No

In Requirement R3 the phrase “or operating conditions” is very vague. There are continuous and ongoing “material changes” to operating conditions. At a minimum, the dispatch scenarios will be different every day, week, month and year. Do these changes constitute material changes to the operating conditions? If so, then the effectiveness of each existing UVLS Program needs to be assessed very frequently. If no, then what constitutes “material changes to the operating conditions”? Suggest removing “or operating conditions”. A review of the UVLS program once every 60 months or as material changes are made to system topology is sufficient. In Requirement R5 it is unclear whether or not the identified deficiencies are the results of the evaluations made in R3 and R4. This needs to be clarified, or else there need to be triggering events clearly stated in R5. Further, R5 requires the

development of a CAP in 3 months, but does not require the implementation of the CAP, and the time frame. Both need to be added.

Yes

Requirement R6 could be removed since in the new MOD-032 standard the Planning Coordinator is required to specify data and models needed for assessment of system reliability and affected entities are required to provide that data to the Planning Coordinator. The MOD-032 requirements can address UVLS data needs.

No

The definition of UVLS program needs to be improved so that it eliminates local programs from consideration. Note that Page 18 has a reference to "TPL category C Contingency" that needs to be updated to be consistent with categories in TPL-001-4.

Group

Texas Reliability Entity, Inc.

Derrick Davis

No

The scope of the UVLS program per the proposed definition seems to be solely toward voltage-related IROLs. We disagree with this approach and feel that the overarching need for any UVLS protection system is to meet the BES performance requirements as stated in the TPL standards and the UVLS definition should be stated on that basis (whether the ULVS systems is applied for a steady-state, post-contingency, stability, or transient condition) for those TPL cases where non-consequential load loss is allowed (i.e. P2, P4, P5, P6, and P7 contingencies). As such, the definition of the UVLS program should be stated in a manner that the UVLS program provides the required BES performance per the TPL.

No

We agree with the PC/TP clarifications. As a different matter, we would like more clarity about the UVLS entities who may not be owners of BES assets. UVLS systems (as well as UFLS systems) are typically provided on distribution feeders which are not BES elements. Since the BES definition does not recognize distribution assets as part of the BES, additional certainty that applicability to UVLS entities is not contingent on UVLS devices being defined as BES assets or attached directly to BES assets. It is a common misconception that Standards requirements only apply to entities that own or operate BES assets.

No

1)Should there be an overarching requirement for the Planning Coordinator to develop and document general criteria for all UVLS programs in the Planning Coordinator's area, especially in the case were there may be region-specific requirements that must be met. It would then follow that program, specifications, and demonstrating of effectiveness developed under R1 and R2 must meet the general criteria. 2)We have existing UVLS systems that where multiple TOs and DPs in different TP areas own the UVLS relays. We are assuming in a case such as this that the PC would be responsible for the demonstration of effectiveness (R1) and the program specifications (R2), but it is not explicitly stated. 3)In R4, the one-year time frame for analyzing

the UVLS performance for an actual event is too long. We suggest following timelines similar to the NERC Events Analysis Process.

Yes

We would suggest rewording the Purpose section as follows: "To establish design, documentation and assessment requirements for automatic Undervoltage Load Shedding (UVLS) programs which support affect the reliability of the Bulk Electric System and are used to meet performance requirements in the Transmission Planning Standards"

No

Please reference comments and suggestions above.

Individual

Keith Morisette

Tacoma Power

No

Tacoma Power has the following comments: Why is the verbiage "...and controls..." included in the proposed definition of a UVLS Program? Consider replacing "...relays and controls..." with just "...relays..." In the proposed definition of a UVLS Program, consider replacing 'used' with 'intended' or otherwise more clearly exclude undervoltage relaying intended primarily or exclusively for equipment protection. In the proposed definition of a UVLS Program, consider changing "...voltage collapse..." to "...wide-area voltage collapse..." The latter description is used in the Application Guidelines.

No

Tacoma Power submits the following comments: Requirement R1, Part 1.2, and Requirement R3, Part 3.2, may be too vague. The Application Guidelines provides some clarity, but an example for each type of system/program listed in Requirement R1, Part 1.2, and Requirement R3, Part 3.2, would be helpful. In Requirement R3, it will be difficult to audit whether or not a Transmission Planner or Planning Coordinator conducted an assessment "sooner if material changes are made to system topology or operating conditions." How is the determination made that changes are "material"? Even the Application Guidelines acknowledges "that the term material change is not transportable on a continent wide basis." Furthermore, what is to keep a Transmission Planner or Planning Authority from waiting the whole 60 calendar months even "if material changes are made to system topology or operating conditions"? In requirement R4, the words "that resulted in a voltage excursion" should be removed from R4. Many substations do not have capabilities to continuously record voltage at a fast enough sample rate to determine if UVLS should have operated. Maximum scan time by a SCADA system as allowed by BAL-005-0.2b is every 6 seconds, but the typical time delay of UVLS is 3 to 10 seconds per

<https://www.wecc.biz/library/WECC%20Documents/Miscellaneous%20Operating%20and%20Planning%20Policies%20and%20Procedures/Undervoltage%20Load%20Shedding%20Guidelines.pdf>. Thus, Planning Coordinators would not be able to prove an excursion did not occur.

We agree with FAQ document that there should be a feedback mechanism from the TOP & DP to the TP or PC, but disagree as to the timeframe and content of that feedback. The TOP or DP should notify the PC and/or TP after an event (i.e. lines tripping out) occurs for which the UVLS program was designed to operate and then provide any available SCADA data or events. We strongly disagree with the concept that a TO or DP should be required to provide data in real-time to a PC or TP. Requiring that the TP or PC analyze real-time data to verify that no individual UVLS relays failed to operate would be a huge burden with no corresponding reliability gain. As outlined in the rationale for the UVLS program definition, one advantage of a UVLS program is that any individual relay may fail to operate, but that single failure is unlikely to affect the reliable performance of the program. The outcome of this requirement should be analysis of known or easily knowable events, and should not require exhaustive documentation to prove events did not occur. As an alternative, the following language would also be acceptable: "Each Planning Coordinator or Transmission Planner shall, within 12 calendar months of an event that resulted in operation of the UVLS Program, perform an assessment to evaluate whether the UVLS Program resolved the undervoltage issues associated with the event." Pursuant to the preceding paragraph, should the applicability be changed to include Transmission Operator, and should a requirement be added to require that Transmission Operators and Distribution Providers notify their Transmission Planner or Planning Coordinator of events that resulted in operation of the UVLS Program? In the Guidance document there are references to both capitalized UVLS Program and to lower case UVLS programs. Please update them all to upper case.

Yes

Tacoma Power submits the following comments: Requirement R2 would require that UVLS entities "adhere to the UVLS Program specifications and implementation schedule determined by its Planning Coordinator or Transmission Planner." Where is the Planning Coordinator or Transmission Planner required to communicate the UVLS Program specifications and implementation schedule to the UVLS entity(ies)? Is it implied by Requirement R1? In Measure M2, consider changing "...the feeders armed..." to "...the equipment armed..." Some entities may interpret 'feeders' as radial distribution circuits operated under 15kV. A UVLS Program should not be limited to application on circuits less than 15kV. Requirement R6 would require that a UVLS entity "provide data to its Planning Coordinator according to the format and schedule specified by the Planning Coordinator..." Where is the Planning Coordinator required to communicate the format and schedule to the UVLS entity(ies)? Is it implied by Requirement R7? Please consider graduated VSLs for Requirement R3 based upon how late the assessment was conducted. In the Severe VSL for Requirement R4, change "15 months" to "15 calendar months." In the Lower VSL for Requirement R6, how can the applicable entity provide "data in accordance with Requirement R6" but not "according to the specified format"? Is verbiage like the following intended? "The applicable entity provided data according to the schedule specified by its Planning Coordinator, but the data was not provided in the specified format." In the Severe VSL for Requirement R8, change "60 calendar days" to "45 calendar days" to be consistent with the High VSL.

No

Please see the included comments. Tacoma Power has submitted specific comments above.
Group
ISO RTO Council Standards Review Committee
Greg Campoli
Yes
No
We see R1 is missing specific wording and needs to specify the requirement to implement the UVLS program. R3 & R5 should be clarified with language so that they only apply to “operating conditions that impact the performance of UVLS”.
Yes
Is R6 needed at all if R1 already requires the data to be provided? This requirement can be duplicative from an implementation standpoint and instead can be covered by adding a requirement to maintain the database under R1 or R2. Under R7, updates should only be required contingent upon other changes required e.g. CAP, R3 topology, etc. 4.1.3 – a missing reference to “TOP” needs to be added.
No
The individual entities signed onto these SRC joint consensus comments are each NERC members and registered in the registered ballot body. This response does not represent any commitment of how each member will vote. However, if each of these comments are addressed sufficiently, we can support PRC-010-1.
Group
SPP Standards Review Group
Robert Rhodes
Yes
No
Whereas the Rationale Box does mention the responsibility of the Planning Coordinator or the Transmission Planner, whichever entity is basically responsible for the UVLS Program and clarification is provided to a certain extent in Section 4.1.3, the clarity that is needed isn't in Sections 4.1.1 and 4.1.2. Rather than simply listing each entity which makes it appear that both are responsible, it may be necessary to include language similar to that found in Section 4.1.3 ‘established by the Transmission Planner or Planning Coordinator’ which would indicate an either/or responsibility. This would be helpful in indicating that the developer or owner of the program is the Applicable Entity, not both as it is currently written.
Yes

While we generally support R1, R3, R4 and R5 we recommend replacing the term 'demonstrate' in Requirement R1 with 'document'. We don't understand to whom we would demonstrate the effectiveness of our UVLS Program. We also suggest adding a couple of commas in R3 to clarify the timing of future assessments. We propose the following: '...at least once every 60-calendar months, or sooner, if material changes are made...' Also, in R5 we suggest tying the assessment to Requirement R4 by making the following change '...identifies deficiencies in its UVLS Program during an assessment, as specified in Requirement R4, shall develop a Corrective Action Plan...'

Yes

What is the driver for the 6-year data retention associated with Requirement R4? We don't see the need for this being any different than the other requirements and was hoping the SDT would share their thinking with us. Here are typo/grammatical suggestions: In the Standard: Hyphenate 60-calendar months and any other similar time period term. This applies to the standard as well as the FAQ document. Spell out Corrective Action Plan (CAP) in the Rationale Box for Requirement R5. In the Severe VSL for R4, '15 months' should be '15-calendar months'. Something appears to have been left out of the Lower VSL for R6. We suggest inserting 'provided' between 'not' and 'according'. Hyphenate 'ride-through' in the last line of the 1st paragraph under the Introduction to the Guidelines and Technical Basis Section of the standard. Hyphenate 'continent-wide' at the end of the 2nd line in the 3rd paragraph under the Guidelines for Requirement R3 Section of the Guidelines and Technical Basis Section of the standard. Replace 'match' with 'duplicate' in the last line of the 1st paragraph under the Guidelines for Requirements R6-R8 Section of the Guidelines and Technical Basis Section of the standard. Also, in the next to last line of the 5th paragraph in the same section, replace 'provide' with 'provided'. In the FAQ Document: Insert 'team' between 'drafting' and 'agreed' in the 4th line of the paragraph under FAQ in Response to Comments. The final report for the August 14, 2003 Blackout is referred to in several locations in the document as the August 14 Blackout Report. Use the complete, correct title of the report. Hyphenate 'sub-requirements' in the 1st line of the 2nd paragraph under Requirements R1, R3 and R4 seem to all require demonstrations of program effectiveness – how are they different? question under the Clarifications on Requirements R1, R3, R4 and R5. Capitalize 'Real-time' in the 2nd paragraph under the Requirement R4 would require the Transmission Planner and Planning Coordinator to review all voltage excursions – isn't this unduly burdensome? question under Clarifications on Requirements R1, R3, R4 and R5.

Yes

In general we tend to support the proposed standard but would like to see the SDT respond to our comments/suggestions above. We are much appreciative of the consolidation of the four legacy standards into the new proposed standard.

Individual

Richard Vine

California ISO

No

This definition is extremely difficult to understand, and the example posed in the Standard lacks clarity. Verbiage in the Standard indicates that a centralized UVLS would be considered an SPS. Yet there is also a citation that appears to exempt UVLS restricted to a single station. This raises the question, how many stations need to be involved, and/or how wide the impacted area? WECC has developed definitions for RAS/SPS impact by defining either the amount of generation and/or load that is impacted by the SPS. It would add a lot more clarity if NERC were to adopt clear bright lines as to how much load and/or generation needs to be impacted before an UVLS is subject to the Standard.

No

1. For R6 and R7, add "Transmission Planner and Transmission Operator" in addition to the Planning Coordinator, such that UVLS entities will be required to provide data to the PC, TP, and TOP. 2. For R8, require "Each Planning Coordinator or Transmission Planner" to provide their database, and add "Transmission Operator" as a recipient for the UVLS Program database. The result would be that R8 would read as follows: "Each Planning Coordinator or Transmission Planner that has a UVLS Program in its area shall provide its UVLS Program database to other Planning Coordinators, Transmission Planners, and Transmission Operators within its Interconnection within 30 calendar days of a request."

No

As elaborated on in the next question (Question 4), we think the TOP should be an applicable entity, particularly for R4, R5, R6, R7 where the time horizon to address the requirement is specified to be the Operations Planning Horizon.

Yes

We think the TOP should be an applicable entity, particularly for R4, R5, R6, R7 where the time horizon to address the requirement is specified to be the Operations Planning Horizon. R4 through R8 state the Time Horizon as the Operations Planning Horizon, yet do not include the TOP, but instead are applicable to the PC or TP. The TOP should be an applicable entity, particularly for R4, R5, R6, R7. The supporting rationale also references coordination with the TOP entities. The Planning Horizon is typically considered to start with year 1, and the Operations Planning Horizon within the first 12 calendar months.

No

Not as currently written. However, if comments are addressed sufficiently, we could support the PRC-010-1 UVLS standard.