

Meeting Notes Project 2008-02 Undervoltage Load Shedding Standard Drafting Team

May 28, 2013 | 12:00–5:00 p.m. ET
 May 29–30, 2013 | 8:00 a.m.–5:00 p.m. ET
 May 31, 2013 | 8:00 a.m.–12:00 p.m. ET

In-person Meeting with ReadyTalk Web Access
 NERC Headquarters
 Atlanta, GA

Administrative

1. Introductions and chair remarks

E. Chanzas, NERC brought the meeting to order at 12:50 p.m. ET. The team members introduced themselves and gave their work history. Those in attendance were:

| Name | Company | Member/ Observer | In-person (IP) or Conference Call / Web (W) | | | |
|-----------------------|--------------|---------------------|--|------|------|------|
| | | | 5/28 | 5/29 | 5/30 | 5/31 |
| Gary Vassallo (Chair) | BPA | Member | IP | IP | IP | IP |
| José Conto | ERCOT | Member | IP | IP | X | X |
| Bill Harm | PJM | Member | IP | IP | IP | IP |
| Brigham Joffs | Luminant | Member | IP | IP | IP | IP |
| Sharma Kolluri | Entergy | Member | IP | IP | IP | X |
| Charles-Eric Langlois | Hydro-Quebec | Member | IP | IP | IP | IP |
| Manish Patel | Southern Co. | Member | IP | IP | IP | IP |
| Fabio Rodriquez | Duke Energy | Member | IP | IP | IP | IP |
| Hari Singh | Xcel Energy | Member | X | X | X | X |
| Anthony Sleva | Altran | Member | IP | IP | IP | IP |

| Name | Company | Member/ Observer | In-person (IP) or Conference Call / Web (W) | | | |
|---------------------------------------|---------|---------------------|--|------|------|------|
| | | | 5/28 | 5/29 | 5/30 | 5/31 |
| Matthew Tackett | MISO | Member | IP | IP | IP | IP |
| Erika Chanzas (Standard Developer) | NERC | Observer | IP | IP | IP | IP |
| Barb Nutter | NERC | Observer | IP | IP | IP | X |
| Juan Villar | FERC | Observer | IP | IP | IP | IP |
| Phil Tatro | NERC | Observer | X | IP | IP | IP |
| Neil Burbure | NERC | Observer | IP | IP | IP | X |

Chair G. Vassallo, BPA welcomed everyone to the team and thanked them for being there. He noted that the team is tasked with continuing the original Project 2008-02 SAR, but that it is up to the team to determine where to focus our efforts.

2. Determination of quorum

The rule for NERC Standard Drafting Team (SDT or team) states that a quorum requires two-thirds of the voting members of the SDT. Quorum was achieved as 10 of the 11 members were present.

3. NERC Antitrust Compliance Guidelines and Public Announcement

The NERC Antitrust Compliance Guidelines and public announcement were reviewed by E. Chanzas. E. Chanzas also provided copies and gave an overview of the Participant Conduct and Email Listserv policies. There were no questions raised. The participants were reminded of the NERC Antitrust Guidelines and public announcement each morning.

4. Review team roster

E. Chanzas reviewed the team roster and asked the team members to review their contact information. The roster was updated accordingly. E. Chanzas explained the purpose of the team and plus email distributions lists, and the nature of the information that is sent out to each.

5. Review meeting agenda and objectives

E. Chanzas reviewed the agenda and informed the team that meetings will be held once a month. Questions were answered accordingly.

Agenda Items

1. Drafting team orientation and training

E. Chanzas presented an overview of the standard development process and the associated roles, responsibilities, guiding principles, and practices and procedures. Questions were answered as raised.

2. Project overview

- a. E. Chanzas presented an overview of the Project 2008-02 UVLS history, background, current state, and forward-looking expectations. The team recognized that two of the noted technical papers, *Guidelines for Developing a UVLS Evaluation Program* (TIS, September 2006) and *NERC SPCS Technical Review of UVLS-Related Standards* (December, 2010) were key inputs into the effort.
- b. E. Chanzas reviewed the meeting summary from the informal meeting in Denver on April 24 and 25 to bring the team members who were not at the meeting up to speed. She went over the potential vision, approach, and challenges that were identified during the informal meeting.
- c. G. Vassallo noted that even though there was some consensus during the informal meeting, there were still some differing opinions. The team needs to decide if they want to revise the original SAR or if they should take it in a different direction.
- d. It was asked if UVLS standards could be left up to the individual Regions. NERC staff noted that the task is to develop a continent-wide standard that may or may not include regional variances. Once the continent-wide standard is approved, if a region needs a stricter standard, then that can be developed.
- e. The following point was raised: The current UVLS standards do not require you to determine if you need UVLS. Do we want to expand the standard to encompass this?
- f. TPL-001-2 was brought up and reviewed. It was noted that the active TPL standards do not address generator ride-through or load modeling issues. The revised TPL standard requires documentation of generator ride-through and load modeling.
- g. In response as to whether the team should provide more guidance on this, the idea to put together a white paper to address this was suggested, which was originally proposed during the informal development meeting in April.
- h. As there was a building consensus that the revised UVLS standard should assume that the load models covered under the new TPL standard have identified a satisfactory solution, the team agreed that planning is outside of the scope of the standard requirements, and that the revised UVLS standard should start at the point where the use of UVLS has already been determined.

3. Review of current SAR

- a. The SPCS report, *Technical Review of UVLS-Related Standards* (December, 2010), which suggests combining the current four UVLS standards into one TPL standard, was raised. It was noted that the importance of the document is the focus on *who* should be included.
- b. G. Vassallo raised the idea of revising the SAR to combine the existing four UVLS-related PRC standards. The team agreed that they should work to revise the SAR, and there was consensus that PRC-010-0 will absorb/revise PRC-020-1, PRC-021-1, and PRC-022-1 to create a revised PRC-010-1.
- c. The Blackout Report was referenced, noting that it appears to promote UVLS. But, the team agreed, UVLS is just one option. In response, it was remarked that on August 14, the point is that load needed to be shed. Subsequently, it was commented that the standard should focus on coordination, because the lack of coordination is what will cause problems.
- d. J. Villar, FERC commented that we need the standard to address voltage instability in regions following multiple contingencies. This is basically what the Blackout Report is stating.
- e. The team arrived at a SAR purpose statement, indicating that the standard should establish requirements to ensure an integrated approach to the design, evaluation, and operation of UVLS, and to coordinate with System steady-state voltage limits and protection and control systems.
- f. The team moved on to address the “Industry Need” section of the SAR, indicating that the need is based on a lack of clear and comprehensive requirements to apply and coordinate UVLS as an option to mitigate or address a number of different voltage issues.
- g. To support the industry need, the team added key references from the SPCS report, FERC Order 693, Paragraph 1509, and August 14, 2003 Blackout Recommendation No. 21. Based on NERC observer and team member knowledge, it was also noted that voltage issues have continued to be a contributor to about 10% of the disturbances over the last 10 years.
- h. The team moved on to writing the SAR’s “Brief Description” section, indicating that PRC-010-0 will absorb requirements from PRC-020-1, PRC-021-1, and PRC-022-1 and be revised to PRC-010-1, which will provide specific requirements for the design, evaluation, and coordinated operation of UVLS programs. The absorbed standards would then be retired.
- i. The “Detailed Description” section of the SAR was then addressed. The SDT expanded the brief description, noting that a results-based standard will be developed to clearly define the responsibilities of applicable entities in pursuing an integrated and coordinated approach to UVLS programs. The team also added points as to what the standard will and will not do.
- j. In response to noting that the standard will not provide requirements to study for the need for a UVLS program, J. Villar re-raised the issue of not addressing the need to require studies, noting that if we do not address it, it is something he’d want to take back to FERC to further evaluate.

- k. The team reviewed how they arrived at the conclusion to not address requiring specific planning studies for UVLS, recapping the SPCS report, noting that the point was not what to do in terms of addressing the UVLS standards, but who it should be applicable to, which includes planners.
- l. It was then noted that loss of load is allowed in the new TPL standard, which can lead to identifying UVLS. This identification should live in the TPL standard.
- m. In response to J. Villar's concerns about the Blackout Recommendations' focus on UVLS, it was noted that the point was that, had load been shed, it would have mitigated the outcomes. This does not specifically have to be UVLS.
- n. TPL-001-02 was brought up again, and the team then reviewed R4–R7. It was noted that these requirements encompass everything you need to study for, including extreme events. J. Villar indicated that he understood the team's consensus.
- o. In continuation of work on the SAR, the team noted that the standard will not apply to GOs or GOPs, as that applicable data reporting is covered under PRC-024-1. The team also determined that it did not specifically need to call out the relationship of this standard with addressing FIDVR, as the SAR descriptions no longer focus on FIDVR as the previous SAR did.
- p. Overlap with EOP-003-2 Load Shedding Plans was discussed. It was determined that there will be overlap, just as UFLS had, and that the team will need to coordinate with the EOP five-year review team to address any changes that might need to be made to EOP-003-2 to avoid redundancies with a revised UVLS standard.
- q. The issue of differentiating between UVLS and a SPS was raised. It was noted that Project 2010-05.02 (Phase 2 of Protection Systems: SPS and RAS) will address the SPS definition and requirements. The SPCS and SAMS are putting out a report with recommendations—P. Tatro sent this to E. Chanzas.
- r. It was noted that one way to look at it is that UVLS is a safety net with no specific contingency. When the safety net is for a specific contingency, then it is an SPS.
- s. This resulted in the team exploring the subject of the definition of a UVLS program. It was noted that the program can be central or local, which is up to the entities.
- t. The question was raised: do we need to address that you shouldn't be setting UVLS to shed massive amounts of load? This led to a discussion of coordinating with other protection systems. In some cases, for instance, UFLS and UVLS could align and shed load at the same time. It was determined that, if nothing else, the team needs to be prepared to answer the question.
- u. PC, TP, TO RC, TOP and DP were added to the "Applicability" section of the SAR. The team then determined that LSEs should not be included because they do not own physical assets and do not set or maintain relays. This was noted in the list of what the standard will not include, also noting that if an LSE is also registered as a DP, the entity will be included under that applicable function.

- v. The team moved on to the “Reliability and Market Interface Principles” section of the SAR. The team agreed to check all except #6 and #8.
- w. In relation to #5 (facilities for communication, monitoring, and control) the issue of locally vs. centrally-controlled UVLS programs was brought up. C. Langlois explained that Hydro-Quebec uses a centralized system with an internal algorithm. It’s a “smart system” that measures voltages around load centers. He also added that Hydro-Quebec considers UVLS an SPS. F. Rodriguez noted that FPL has a similar system. S. Kolluri remarked that Entergy has a similar scheme, but that they consider it UVLS, under the belief that if a low voltage occurs, it’s UVLS. If a line overload happens and load drops, it’s SPS.
- x. J. Villar noted that it’s up to the team to determine if we need to define this. P. Tatro pointed out that SPS is already defined, and further work is being done to revise the definition. This team needs to define UVLS.
- y. It was noted that that the team does not need to talk about SPS now, but that they need to consider: When is a centralized system covered by UVLS, and when is it covered by SPS? If two entities have similar schemes, they should be called the same thing.

3(a). Initial drafting of requirements

- a. E. Chanzas pulled up the results-based standard template and walked through the structure. It was decided that the team should begin by drafting a definition for UVLS. The team looked at the *NERC SPCS Technical Review of UVLS-Related Standards*, which provides explanation of the different kinds of UVLS programs.
- b. The team worked together to create and refine a definition for Automatic Undervoltage Load Shedding Program, which defined it as a coordinated load shedding program that is automatically activated in response to severe undervoltage conditions. The definition also broke down the characteristics of a locally-controlled program and a centrally-controlled program.
- c. Tom Burgess, NERC VP and Director of Reliability Assessment and Performance Analysis stopped in to observe the SDT meeting. Upon the team deciding that the template’s section of applicable facilities was not applicable to the standard, T. Burgess brought up the concept of UVLS relating not just to voltage collapse, but also to widespread transmission disturbances, remarking that in the Blackout Report, UVLS was the tool that prevented the propagation by tripping lines, to regain the balance of generation and supply.
- d. G. Vassallo followed by asking T. Burgess what specific types of facilities would he suggest be included in the standard. T. Burgess responded by noting elements that trip in a reactive protective zone, transmission elements that are related to safety net schemes, and those related to reactive balance in a load zone.
- e. The issue of using the term safety net in the definition was raised. It was noted that we don’t want to be so specific to the idea of voltage collapse, and that maybe instead of referring to voltage

collapse, the wording should be severe voltage conditions (as indicated by the final definition noted in point b. above).

- f. T. Burgess broke down two aspects: 1) voltage collapse conditions, and 2) a combination of events occur that would warrant a safety net, and UVLS is a tool.
- g. After some more discussion, T. Burgess understood that we are only talking about shedding load, and not doing things that indirectly shed load.
- h. It was determined that facilities do not need to be listed since UVLS is being defined. The team also agreed to revisit the applicability of functional entities section after drafting some requirements.
- i. The SDT then approached writing requirements. At first, the team approached it as linear steps, beginning with the planners handing off the implementation details to the applicable entities (R1). R2 indicated that the UVLS program should be implemented as requested.
- j. There was discussion over minimizing the perception that R1 indicates that the planners have the authority to require a UVLS program. It was noted that the team may need to clarify that if a PC and TP develop a UVLS program, it presumes that all applicable entities are on board with it.
- k. As drafting continued, the team decided to change the approach by following the PRC-006-1, UFLS requirements, pulling the concepts as applicable.
- l. As the team identified R3–R6, which involve addressing Misoperations, J. Villar noted the need to coordinate with the requirements of PRC-004-3, Misoperations that are currently in development.
- m. As the team was working on R4, which includes a review of whether the program operated as intended, it was determined that the review criteria (initially picked up from the corresponding UFLS standard) should be moved to the Application Guidelines section.
- n. R3 was reworked by cloning R4, and then revising it to address making sure the equipment operated as intended. This raised the issue of how to evaluate when the program did not operate at all, i.e., it was neither an operation nor Misoperation.
- o. It was noted that operations, Misoperations, and program response to events that resulted in voltage excursion are what need to be evaluated. As a result, a sub requirement was added to analyze events that resulted in voltage excursion for which UVLS program operation was expected.
- p. Discussion began over coordinating with PRC-004-3, and if this standard will need to address the same complex multiple ownership issues that PRC-004-3 is trying to address. It was noted that centrally-controlled programs may have some of the same issues, which led to the suggestion that there should be a separate requirement for centrally-controlled programs (R7). The team also agreed that R5 and R6 should address CAPs for R3 and R4, respectively.

- q. It was remarked that in terms of centrally-controlled programs, it comes down to who owns the equipment, not the registered entities, because it's different in each case. Also, some centrally-controlled systems are owned by multiple entities.
- r. J. Villar noted that addressing UVLS Misoperations may not get as involved as PRC-004-3 since it's not looking at all operations. It was decided that before completing further work on these requirements, E. Chanzas should touch base with the PRC-004-3 Standards Developer to see what standard's development status is.
- s. The team identified that R8 should address database requirements, and R9 should require the TO and DP to shed load. At this point, the team felt they had identified all apparent potential requirements for the standard.

4. Review of schedule

As of the current schedule against the current SPM, the project is due to post for an initial 30-day comment period during the first half of November, meaning development must end a month prior in October. Outreach should ideally start by August. The next meeting should focus on solidifying requirements and developing responses to the SAR comments, which can be posted together prior to the start of outreach activities.

The posting dates and milestones are subject to change if/when the new SPM is approved by FERC.

5. Action items or assignments

- a. E. Chanzas – Touch base with the PRC-004-3 Standard Developer to coordinate and get standard development status; initiate coordination with EOP five-year review team Standard Developer; provide internal roster to team; create outreach event log/tracker; coordinate getting frequently used reference docs posted to the Related Files section of the project page.
- b. P. Tatro – Review the SPCS report on SPS to further identify cross-efforts and/or dependencies.
- c. H. Singh – Create an initial outline for a white paper that covers the role of voltage stability analysis within reactive adequacy assessment in regard to explaining how and when UVLS is identified as a mitigation option.
- d. M. Patel and A. Sleva – Work on R1 and R2.
- e. C. Langlois and M. Tackett – Work on R7.
- f. B. Joffs and F. Rodriguez – Work on R8.
- g. B. Harm and G. Vassallo – Work on R9.
- h. All – Start identifying possible outreach forums/opportunities.

6. Next steps

The next meeting will focus on solidifying requirements and addressing SAR comments for posting and outreach.

7. Future meeting(s)

- a. June 24–27, 2013, PJM in Valley Forge, PA
- b. August 5–8, 2013, TBD (Tentative)
- c. August 26–29, TBD (Possibly Denver since SAMS is there at the same time)
- d. September 16–19, TBD

8. Adjourn

The meeting adjourned at 11:05 a.m. ET on Friday, May 31, 2013.