

Unofficial Comment Form for 3rd Draft of Underfrequency Load Shedding Program Requirements — Project 2007-01

Please **DO NOT** use this form. Please use the [electronic form](#) located at the link below to submit comments on the proposed 3rd draft of the Underfrequency Load Shedding Program Requirements developed by the standard drafting team for Project 2007-01 – Underfrequency Load Shedding. Comments must be submitted by **July 16, 2010**. If you have any questions please contact Stephanie Monzon at stephanie.monzon@nerc.net or by telephone at 610-608-8084.

http://www.nerc.com/filez/standards/Underfrequency_Load_Shedding.html

Background Information

The major objectives of Project 2007-01 Underfrequency Load Shedding (UFLS) are to:

- 1) Ensure UFLS programs are developed to provide an appropriate level of reliability (not least common denominator).
- 2) Ensure that the standard is enforceable with clearly defined requirements and unambiguous language.
- 3) Address the issues raised by FERC Order 693 and other applicable orders.
- 4) Address the issues raised in the original Standards Authorization Request (SAR) for this project.
- 5) Address coordination between underfrequency load shedding and generator trip settings during frequency excursions.

The standard drafting team (SDT) for Project 2007-01 Underfrequency Load Shedding based its work on the existing NERC Reliability Standards:

- PRC-006-0 — Development and Documentation of Regional UFLS Programs,
- PRC-007-0 — Assuring Consistency with Regional UFLS Program Requirements, and
- PRC-009-0 — UFLS Performance Following an Underfrequency Event.

Project 2007-01 Underfrequency Load Shedding is one of four projects¹ identified in the Reliability Standards Development Plan: 2008-2010 as requiring a set of Regional Standards to support a continent-wide standard.

In accordance with the associated SAR, a standard drafting team was appointed to draft the continent-wide UFLS standard with consideration of developing supporting regional standards. For the first posting the team recommended that, instead of developing a continent-wide standard, NERC issue a set of UFLS performance characteristics required in regional reliability standards for implementing automatic UFLS programs to arrest declining Bulk Electric System frequency. The team posted the set of UFLS performance characteristics for comment and received valuable feedback. However, many comments expressed concern that a directive containing these performance characteristics was a new

¹ The other three projects were, Project 2007-05 Balancing Authority Controls; Project 2007-11 Disturbance Monitoring; and Project 2008-04 Protection Systems

form of “requirement” and would not necessarily follow the NERC standards development process including future revisions to the performance characteristics with industry input.

Considering industry feedback and the intent of the Rules of Procedure regarding directing regional reliability standards, the team evaluated many options that would preserve the existing regional entity expertise relative to defining credible islands within or between its region and neighboring regions and expertise in assessing islands within their regions based on electrically interconnected areas. The team also considered the role of the Planning Coordinators in their analysis as the functional entity most suitable to determine the UFLS program design given that the Regional Entities are not user, owners, or operators of the Bulk Electric System and should not be assigned responsibility for requirements.

After much deliberation, the team decided to convert the “Characteristics of UFLS Regional Reliability Standards” into a continent wide standard that will follow the standards development process and presented these requirements to the industry in the second posting in early 2009.

In the development of the third draft of the standard the drafting team considered the industry comments and made several clarifying and technical changes to the requirements. The following is a summary of the changes made to the standard.

Applicability

The applicability section of the second draft of the standard included “Distribution Providers” and “Transmission Owners with end-use Load connected to their Facilities where such end use load is not part of a Distribution Provider’s load.” This second draft language reflected the SDT’s intent to establish the applicable entities in the UFLS standard to be those entities that supply UFLS capability. However, as a result of comments submitted in the second posting and further discussions within the SDT, the SDT now believes that the identification of the applicable entities was not an entirely accurate reflection of the participating registered entities. Therefore, the applicability section was modified. The SDT is now proposing that “UFLS entities” within the standard shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include Transmission Owners and/or Distribution Providers. The concept to define a group of entities within the body of the standard in the Applicability section currently exists in the CIP-002-1. In addition, the SDT included Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators in the applicability. Transmission Owners would be subject to the standard if they have been identified by the group of Planning Coordinators as having the obligation to switch certain Elements as part of the UFLS program.

In the second posting, many of the requirements were assigned to groups of Planning Coordinators. These groups were to consist of all the Planning Coordinators within each of the Regional Entity footprints. The SDT has now revised these assignments to replace the groups with individual Planning Coordinators due to difficulties involved in assigning responsibilities to groups that do not currently exist.

Review of Technical Changes to Standard

The SDT has revised the under and overfrequency performance characteristics to refer to under and overfrequency curves (as Attachments 1 and 2) rather than discrete points as in former drafts. The SDT believes that curves provide more uniform coordination with generator under and overfrequency tripping requirements being proposed in PRC-024-1. In addition, the team extended the underfrequency performance characteristic curve to 60

seconds from the previous 30 second duration. The team agreed to extend the underfrequency performance characteristic to permit the MRO Region to avoid having to specify a variance to cover instances where there may be slower recovery of frequency. The SDT believes that recovery of frequency within 60 seconds, though somewhat less stringent than requiring recovery within 30 seconds, remains acceptable for reliability and for coordination with generator underfrequency tripping. The SDT has similarly substituted the discrete points used in former drafts, for identifying which generator trip settings need to be included in the assessments of UFLS program design, with curves. These curves are shown on the same graphs as the performance characteristic curves (in Attachments 1 and 2) and are the same curves as are being proposed in PRC-024-1 for generator under and overfrequency tripping, thus ensuring explicit coordination between UFLS and generator tripping.

The SDT has modified the approach for ensuring coordination between regions and for selecting islands that overlap adjacent regions within an interconnection. The SDT has deleted the requirement that involved the development of procedures for coordination between groups of Planning Coordinators in neighboring regions in selecting interregional islands (version 2 of draft standard Requirement R4). In version 3 of the draft standard, any Planning Coordinator may now select islands including interconnected portions of the BES in adjacent Planning Coordinator footprints and Regional Entity footprints, without the need for coordinating this selection with neighboring regions. The SDT has added a requirement for the Planning Coordinators to reach concurrence on the UFLS assessments for any islands identified by any one Planning Coordinator that encompasses more than one Planning Coordinator footprint. This revised approach to interregional coordination is contained in Requirements R5 and R13.

Some commenters noted that switching of certain transmission facilities is sometimes necessary to be carried out as part of a UFLS program design. The SDT agreed and has added Requirement R10 which requires Transmission Owners to provide automatic switching of Elements in accordance with the UFLS program design should a Planning Coordinator determine that such switching is a necessary part of the UFLS program design.

The SDT has added requirements to include an assessment of the performance of UFLS programs “within one year of an actuation of UFLS resulting in 500 MW or greater of loss of load.” (Requirement R11). Requirement R12 requires the Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, to conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. Lastly, Requirement R13 requires the Planning Coordinator, in whose footprint an islanding event affecting multiple Planning Coordinator footprints and resulting in 500 MW or greater of UFLS actuated loss of load occurs, to reach concurrence with the other affected Planning Coordinators on the event assessment results before event assessment completion. In the former drafts, event analysis was left to be covered by the NERC Rules of Procedure. However, it is now believed that including a requirement in this standard for UFLS event analysis is a more appropriate mapping of PRC-009-0 Requirement R1 which will be replaced by this standard, PRC-006-1.

Hydro-Quebec Variance

Earlier in 2009, NPCC identified the need for a variance to the standard for the Québec Interconnection within NPCC. Due to the physical characteristics of the Québec system the UFLS program in Québec arrests frequency at a lower threshold and permits higher frequency overshoot than allowed in the proposed standard. The installed generation in the Québec Interconnection is 98 percent hydraulic generation, allowing wider tolerances on frequency performance without jeopardizing reliability. The variance also establishes a

different capacity threshold for the generating units for which underfrequency and overfrequency trip settings must be modeled to address concerns that by 2020, 10 percent of the installed capacity in Québec may be located at plants less than 75 MVA. The Standards Committee appointed a member from the Québec Interconnection to the drafting team to develop the variance for Québec. Working closely with this representative, the team developed the variance to Requirement R3 parts 3.1 and 3.2 and Requirement R4 parts 4.1 and 4.2. The variance to these requirements reference separate under and overfrequency curves included as attachments 1A and 2A to the standard.

EOP-003-1 Revisions

In reviewing the responses to comments on the second posting, several commenters noted that certain requirements in the exiting EOP-003-1 standard conflict or are redundant with the requirements being proposed by this SDT. The team agreed with these commenters and felt that if left unaddressed, the redundancies and conflicts could result in compliance issues in the future. As a result, the team submitted a request to supplement the existing SAR for Project 2007-01 to include a revision to EOP-003-1 in order to exclude those requirements related to automatic underfrequency load shedding since PRC-006-1 will contain these. The Standards Committee approved this action and the team moved forward with revising the existing EOP-003-1 requirements. The team is presenting these modifications to the EOP-003-1 requirements in this third posting of the standard and would like industry feedback on the revisions noting that the changes were conducted with the limited purpose of removing automatic underfrequency load shedding from the scope of EOP-003. Two other drafting teams are already in place to review the other aspects of EOP-003 as part of Project 2009-02 – Real-time Tools and Project 2009-03 – Emergency Operations.

The following questions will assist the SDT in finalizing the development of the Underfrequency Load Shedding continent wide standard. For questions where you agree with the SDT, please state that you agree and if available, please provide supporting documentation. If you disagree with the SDT, please explain why you disagree and provide data to support your position. To improve the Underfrequency Load Shedding continent wide standard, the SDT would appreciate responses to as many of these questions as you can answer.

1. The SDT drafted Violation Risk Factors, for the requirements. Do you agree with the proposed Violation Risk Factors?

Yes

No

Comments: The VRFs for R3, R4, R9, and R10 should be reduced from "High" to "Medium" for several reasons. [1] Automatic UFLS programs are system preservation measures of last resort that may help the BES recovery if the primary system preservation measures are insufficient. So, the risk to the system reliability is low because primary measures will normally restore the system even if some UFLS requirements are not completely fulfilled. [2] System events that would activate automatic underfrequency load shedding have been very rare. So, the risk to system reliability is low because events of unacceptable underfrequency rarely occur even if the sum of the UFLS requirements not completely fulfilled. [3] Automatic UFLS programs can only be designed to help preserve the system for a wide range of, but not all, possible system conditions. So, the risk to system reliability is low because UFLS programs may help for many system conditions, even

if some of the UFLS requirements are not completely fulfilled. [4] For R4, the performance of the UFLS program and the characteristics of the associated islands change only slightly and gradually over many years. So, the risk to system reliability would not change dramatically if conducting or documenting of a UFLS design assessment was delayed by several years.

2. The SDT drafted Measures for the requirements. Do you agree with the proposed Measures?

Yes

No

Comments:

Suggest that the measures be modified to reflect any changes made to standards Requirements per the comments made to questions Q4 through Q13.

M10 – Replace “automatic switching of Facilities” with “automatic switching of Elements” to be consistent with the associated Requirement R10.

3. The SDT drafted Violation Severity Levels for the requirements. Do you agree with the proposed Violation Severity Levels?

Yes

No

Comments:

Most of the VSLs are okay. However, the VSLs for R5 and R13 depend on reaching “concurrency” with other entities, which is not a valid basis for measuring compliance. If the concurrency requirement is not revised as suggested below, then we propose that the VSL levels be reduced.

4. In the second posting, many of the requirements were assigned to groups of Planning Coordinators. These groups were to consist of all the Planning Coordinators within each of the Regional Entity footprints. The SDT has now revised these assignments to replace the groups with individual Planning Coordinators due to difficulties involved in assigning responsibilities to groups that do not currently exist. Do you agree with this revision?

Yes

No

Comments:

Although THE NSRS agrees with changing the applicability of the requirements from groups of Planning Coordinators to each Planning Coordinator, the present wording in R2.3 says that for a PC with a part of its footprint in more than one region, “each of those Regional Entity footprints shall be identified as an island.” We propose that the wording be revised to require a PC with part of its footprint in more than one region to identify only those appropriate parts of its area that are in islands, not the entire Registered Entity footprint where it may be present.

5. Several commentators indicated in the second posting potential conflicts and redundancies between PRC-006-1 and EOP-003-1 requirements. The SDT agrees that EOP-003-1 contains requirements that are redundant and/or conflict with the proposed

requirements in PRC-006-1. The SDT sought approval to post a supplemental SAR to include EOP-003-1 Underfrequency Load Shedding related requirements in the scope of the UFLS SDT. The SC agreed to post the SAR with a proposal to revise the original scope of the UFLS SAR and the SDT revised the EOP-003-1 requirements to remove the conflicts.

6. Do you agree with the expanded scope in the Supplemental SAR?

Yes

No

Comments: We propose that the scope of the SAR be revised to call for removing all of the automatic UFLS requirements from EOP-003-1 and moving them to PRC-006-1 standard because no automatic load shedding system requirements should be in the EOP standards. We also note that a separate SAR should be initiated to call for the removal of all the automatic UVLS requirements from EOP-003-1 and moving them to a new PRC standard for the same reason.

7. Do you agree with the revisions to EOP-003-1?

Yes

No

Comments: In line with the comments for Question 6:

R2 - remove this requirement because it refers to automatic load shedding plans and let the automatic requirements be covered by PRC-006-1 and a new PRC standard.

R3 – Recommend R3 be rewritten to read: Each Transmission Operator and Balancing Authority shall ~~coordinate~~ provide manual load shedding plans ~~among~~ to adjacent interconnected Transmission Operators and Balancing Authorities.

R4 - remove this requirement because it refers to automatic load shedding plans and let the automatic requirements be covered by PRC-006-1 and a new PRC standard.

R5 – add the qualification “implement manual load shedding plans”.

R7 - remove this requirement because it refers to automatic load shedding plans, and let the automatic requirements be covered by PRC-006-1 and a new PRC standard.

8. Based on industry supplied comments, the SDT modified the applicability of the standard from “Transmission Owners with end-use Load connected to their Facilities where such end use load is not part of a Distribution Provider’s load” and “Distribution Providers” in the second posting to “UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include Transmission Owners and/or Distribution Providers” in an effort to more appropriately identify those entities responsible for providing UFLS coverage. Has the SDT correctly identified the proper entities for UFLS coverage?

Yes

No

Comments:

9. The SDT has modified the performance characteristics in Requirements R6.1 through R6.3 (now parts 3.1, 3.2 and 3.3 of Requirement R3) and the modeling requirements for generator underfrequency and overfrequency protection in Requirement R7.1 and R7.2 (now parts 4.1 through 4.6 of Requirement R4). The modifications replace the discrete points in these requirements with frequency-time curves that achieve the same reliability objective. The SDT agrees with several commenters in the second posting that this approach is easier to understand and better demonstrates the coordination the SDT has achieved with the requirements proposed by the Generator Verification SDT in proposed standard PRC-024. Do you agree with these changes?

Yes

No

Comments: We propose the following:

1. In R3, simply say that the "program shall shed at least 25% of island load" and avoid use of the formula. If the formula is retained, then we suggest that it be changed to the more common industry nomenclature of "imbalance = (load-generation)/generation."

2. In R4, we interpret that the Equivalent Inertia Analysis is a valid dynamic simulation methodology for certain aspects of UFLS assessments. This is a methodology that is often recommended in relay application guides and other technical references. Please clarify that this type of dynamic analysis would be accepted toward compliance with the "through dynamic simulation" portion of this requirement.

For Attachment 1 (R4.1, R4.2 & R4.3) and Attachment 2 (R4.4, R4.5 & R4.6)

3. Attachment 1 and 2 include transient frequency performance curves for at least 30%, 40% and 50% island imbalance. Otherwise, revise the titles for Attachments 1 and 2 to clearly qualify that the transient frequency performance curves apply for a 25% or less island imbalance and that programs which are larger than this minimum load shedding requirement do not have to meet this criteria when overloads are in excess of 25%. In addition, UFLS programs that are designed for appropriate performance under imbalance conditions above 25% will not have the same performance curves as programs that are designed for imbalance conditions of 25% or less.

4. If item #3 is not adopted, then the Under Frequency Performance Characteristic line in Attachment 1 should be extended from the knee at approximately 58.9 Hz (for 60 seconds) to 59.3 Hz or 59.5 Hz (for approximately 500 sec). The purpose is to define a single line of constant slope and to get rid of the arbitrary knee in the characteristic curve which serves no reliability purpose. The reason for this change is that the worst case frequency recovery time for frequencies between 58.7 Hz and 59.5 Hz may occur for imbalance conditions significantly less than 25% where the governor response prevents the load shedding blocks from picking up and where frequency recovery times are a function of governor response and system inertia. Likewise, it makes sense to extend this line below 58 Hz to at least as low a frequency as is covered by the generation protection curve.

5. Add a note to Attachment 1 that states, "Larger size UFLS programs (e.g., 40%) may require less restrictive (lower) underfrequency (as well as and/or longer time

delays) due to island generation and protection characteristics. UFLS programs shedding more than 25% must also increase generation protection delay times and/or change set points to achieve coordination with load shedding. For example, Manitoba Hydro and Saskatchewan need to shed more than 30% of the area load to achieve reasonable frequency recovery in their islands. In these areas, the shedding of a higher percentage of load may allow the frequency to drop below 58.2 Hz for longer than 4 seconds, but the subsequent impacts on the hydro generator in these islands are acceptable.

Generator Underfrequency and Overfrequency Coordination Attachments

6. The Generation Owner off-nominal frequency coordination requirements and coordination curves should be included only in the PRC-006 standard and not the PRC-024 standard. The generator coordination curves relate directly to the PRC-006 assessment requirements and the PRC-006 curves will be duplicative of, and possibly contradictory to, the curves in the PRC-024 standard if they are finally approved and then changed in the future.

7. The generation coordination curves need to be appropriate for the different types of UFLS programs (e.g. 25%, 30%, 40%, 50%, etc.) that have, or will be, designed and implemented for different islands. Generation coordination curves for 25% UFLS programs will not be the same for other (e.g. 30%, 40%, 50%) UFLS programs. It can be demonstrated that as the size of the load shedding program is increased, the generation protection settings have to be modified accordingly to achieve the coordination objectives. UFLS programs that are designed for imbalances greater than 25% inherently require lower minimum frequencies and longer frequency recovery times.

8. If item #7 above is not adopted, then revise the titles for generation coordination curves to clearly qualify that they apply for a 0% to 25% island imbalance and that programs which are larger than this minimum load shedding requirement do not have to meet this criteria when overloads are in excess of 25%. The generation protection line should extend to 57 Hz (at .3 sec) to 59.5Hz (at 1800 sec). The minimum frequency of 57.0 Hz was chosen because most conventional generation can briefly operate down to 57.0 Hz and large load shedding programs may need to make use of that capability to achieve coordination with these UFLS programs.

9. We are aware of the technical basis for the generator Under Frequency protection setting, but not aware of the technical basis for the presently proposed generation coordination curves in PRC-006 or PRC-024. We suggest that the SDT provide the industry with the technical basis for the generation coordination curves. We are concerned that the curves allow enough time for load shedding to operate under "**worst case conditions**", and as much time as possible needs to be given for frequencies close to 60 Hz. We are also concerned that for actual UFLS events system frequency recovery may stall below 59.5 Hz for a long time while operators try to deal with event with manual shedding of load.

Volts/Hertz Performance Characteristic

10. The Volts/hertz requirement is not needed in this standard and should be removed for several reasons: [1] Voltage regulators automatically reduce voltage according to volts per hertz when in the automatic mode so they self protect. Industry recommendations/standards (IEEE C37.102 or IEEE C37.106, ANSI C50.13-1989, IEEE C57.12.00-2000) already exist that adequately address the

volts/Hz issue. [2] If voltage regulators are in automatic, then the 110% volts/Hz limit becomes active between 57.2 Hz and 51.8 Hz assuming the voltage regulator holds terminal voltage within the allowed 1.05 p.u. to 0.95 pu range. [3] Units with voltage regulators in manual will just trip when volts per Hertz protection picks up. However, units are normally in the automatic control mode per NERC Standards. [4] It appears this requirement is appropriate for programs which may experience frequencies below 57.2 Hz, but few, if any, programs are expected to be designed for frequencies that are this low. [5] Even if UFLS programs are designed for frequencies below 57.2 Hz, this performance characteristic cannot presently be properly simulated in stability cases as the voltage regulator V/Hz controls are not presently included in generator exciter/voltage regulator models of the present power system modeling programs that are used for dynamic power system simulation.

10. Besides replacing the discrete point thresholds in R7.1 and R7.2 (now parts 4.1 through 4.6 of Requirement R4) with curves, the SDT has clarified which generators with under- and underfrequency trip settings above and below these curves, respectively, must be included in the UFLS assessments in parts 4.1 through 4.6 of Requirement R4. The generators with non-conforming trip settings that must be included in the UFLS assessments are now limited to individual generating units greater than 20 MVA or generating plants/facilities greater than 75 MVA directly connected to the BES or any facility consisting of one or more units that are connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating. This clarification also makes parts 4.1 through 4.6 consistent with the generator size and connection thresholds in part 3.3.1 of Requirement R3. Do you agree with this clarification?

Yes

No

Comments:

11. The SDT has replaced Requirement R4 appearing in the previous (second) draft of the standard. Requirement R4 required each group of Planning Coordinators to develop a procedure for coordinating with groups of Planning Coordinators in neighboring regions within an interconnection to identify and reach agreement on islands between its region and neighboring regions within the interconnection. Requirement R4 was removed because procedures for coordination do not directly support reliability. In version 3 of the draft standard, any Planning Coordinator may now select islands including interconnected portions of the BES in adjacent Planning Coordinator footprints and Regional Entity footprints, without the need for coordinating this selection with neighboring regions (Requirement R1). The SDT has added a requirement for the Planning Coordinators to reach concurrence on the UFLS assessments for any islands identified by any one Planning Coordinator that encompasses more than one Planning Coordinator footprint (Requirement R5). Do you agree with this revision?

Yes

No

Comments: Replace the words "reach concurrence with" with "provide UFLS design assessment results to". Fulfillment of a compliance measure that involves reaching concurrence with another entity is dependent on the other entity and can be outside of the control of the Planning Coordinator. In addition, replace the words "other affected Planning Coordinators" with "other Planning Coordinators that have design assessment responsibilities for islands covered in the design assessment

report. The qualification of "other affected Planning Coordinators" is too vague and could be interpreted and categorized differently by various entities and auditors.

12. The SDT added a Requirement R10 that requires each Transmission Owner to provide automatic switching of Elements in accordance with the UFLS program design. The SDT added this requirement in response to comments submitted in the second posting of the standard that indicated that automatic switching of Elements may be important as part of the UFLS program design. Do you agree with this requirement?

Yes

No

Comments: The NSRS basically agrees with the concept that owners of automatic switching elements provide control in accordance with the UFLS program requirements. Therefore, [1] consideration should be given to replacing "Transmission Owner" with "UFLS entity" because the automatic switching of distribution Elements (e.g. capacitor banks) may be more effective and practical in UFLS program design than restricting the scope of the requirement to just transmission Elements.[2] And consider replacing "UFLS program" with "UFLS program requirements".

13. The SDT added new Requirements, R11 through R13. Requirement R11 requires each Planning Coordinator, in whose footprint a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, to conduct and document an assessment of the performance of UFLS equipment and the UFLS program effectiveness within one year of event actuation. Requirement R12 requires Planning Coordinators, in whose islanding event assessments (per R11) UFLS program deficiencies are identified, to conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. Lastly, Requirement R13 requires Planning Coordinators, in whose footprint a BES islanding event affecting multiple Planning Coordinator footprints and resulting in system frequency excursions below the initializing set points of the UFLS program, to reach concurrence with the other affected Planning Coordinators on the event assessment results before event assessment is complete. These requirements were added to provide continuity on the requirement to assess UFLS program effectiveness for events since there is a similar requirement (with different applicable entities) currently in PRC-009-0, but PRC-009-0 is to be retired on approval of this standard. Do you agree with the addition of these requirements?

Yes

No

Comments:

1. For R11, replace "Each Planning Coordinator, in whose footprint . . . to evaluate" with "When a disturbance event occurs in a Planning Coordinator's footprint that involves automatic UFLS program operation or frequency excursions that should have activated UFLS program operation, and a final disturbance report is required per EOP-004, each Planning Coordinator shall evaluate within one year of the disturbance event: ".

2. We have concerns about specifying that the evaluation must be complete within one year we know that some historical studies of events that included UFLS took longer than one year [e.g., three years] to complete. Therefore, we would prefer a more flexible wording, a longer time frame to be used in this

requirement. Perhaps the requirement could stipulate that the evaluation must begin within 6 months and be completed within the schedule set by the investigative team.

3. For R13, replace “in whose footprint . . . on the event assessment result” with “that conducts an UFLS design assessment (per R12) for islands where other Planning Coordinators have design assessment responsibilities shall provide a design assessment report to those Planning Coordinators.” The reference to the event assessment report should be part of R11. The qualification of “event affecting multiple Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.
4. R11.2, change the wording to replace “effectiveness of the UFLS program” with “conformance with UFLS program design”. Because no UFLS program can be designed to be effective for all possible contingency scenarios but should be effective for the contingency scenarios for which it was designed.

14. The industry identified a need for a variance for the Québec Interconnection within NPCC to address the physical characteristics of the Québec system. This variance allows frequency decline to be arrested at a lower threshold and higher frequency overshoot without jeopardizing reliability because the installed generation in the Québec Interconnection is 98 percent hydraulic. The variance also establishes a different capacity threshold for the generating units for which underfrequency and overfrequency trip settings must be modeled to address concerns that by 2020, 10 percent of the installed capacity in Québec may be located at plants less than 75 MVA. The SDT has proposed the variance that meets the needs of the Québec interconnection in the third draft of the standard. In particular SDT developed the variance to Requirement R3 parts 3.1 and 3.2 and Requirement R4 parts 4.1 through 4.6. The variance to these requirements reference separate under and overfrequency curves included as attachments 1A and 2A to the standard. Do you agree with this Variance?

Yes

No

Comments: