Unofficial Comment Form

Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination

Do not use this form for submitting comments. Use the Standards Balloting and Commenting System (SBS) to submit comments on **Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination** by **8 p.m. Eastern, June 17, 2022.**

Additional information is available on the project page. If you have questions, contact Senior Standards Developer, Alison Oswald (via email), or at 404-446-9668.

Background Information

From February 8 through February 20, 2021, extreme cold weather and precipitation caused large numbers of generating units to experience outages, derates or failures to start, resulting in energy and transmission emergencies (referred to as "the Event"). The total Event firm Load shed was the largest controlled firm Load shed event in U.S. history and was the third largest in quantity of outaged megawatts (MW) of Load after the August 2003 northeast blackout and the August 1996 west coast blackout. The Event was most severe from February 15 through February 18, 2021, and it contributed to power outages affecting millions of electricity customers throughout the regions of ERCOT, SPP and MISO South. Additionally, the February 2021 event is the fourth cold weather event in the past 10 years, which jeopardized bulk-power system reliability. A joint inquiry was conducted to discover reliability-related findings and recommendations from FERC, NERC, and Regional Entity staff. The FERC, NERC, and Regional Entity staff Joint Staff Inquiry into the February 2021 Cold Weather Grid Operations ("Joint Inquiry Report") was published on November 16, 2021.

The scope of the proposed project is to address the ten recommendations for new or enhanced NERC Reliability Standards proposed by the Joint Inquiry Report. In November 2021, the NERC Board of Trustees (Board) approved a Board Resolution directing that new or revised Reliability Standards addressing these recommendations be completed in accordance with the timelines recommended by the joint inquiry team, as follows:

- New and revised Reliability Standards to be submitted for regulatory approval before Winter 2022/2023: development completed by September 30, 2022, for the Board's consideration in October 2022 to address Key Recommendations 1d, 1e, 1f, and 1j;
- New and revised Reliability Standards to be submitted for regulatory approval before Winter 2023/2024: development completed by September 30, 2023, for the Board's consideration in October 2023 to address Key Recommendations 1a, 1b, 1c, 1g, 1h, and 1i.

Questions

1. The SDT revised EOP-011-3 requirements R1 and R2 for the TOP to minimize the overlap of UFLS and UVLS circuits from those used for manual load shed or those that serve critical loads. Should PRC-006-5 Requirement R7 and PRC-010-2 Requirement R8 also be modified to include a Requirement that Planning Coordinators shall provide UFLS and/or UVLS (as applicable) program database data to Transmission Operator's upon request, in order to ensure that all TOPs have the necessary data to minimize the overlap of circuits as required in the newly proposed EOP-011-3 Requirement R1.2.5.3? Please provide any explanation with your response.
   ☐ Yes
   ☐ No

   Comments:

2. Should the BA be the entity to determine the "winter season", which is used to define applicable generating units in proposed EOP-012-1 Section 4.2 Facilities? If you do not agree, please provide your recommendation and, if appropriate, technical or procedural justification.
   ☒ Yes
   ☐ No

   Comments:

   BA Requirement to determine and communicate definition of winter season

   The BA is the appropriate entity to determine the "winter season" for purposes of defining applicable generating units in proposed EOP-012-1. Because applicability of EOP-012 hinges on the BA's determination, the SDT should consider a Requirement, possibly in EOP-011, for the BA to make the determination and communicate it to the GOs in its footprint. Proposed requirement language: "The Balancing Authority shall determine the winter season for its footprint, and shall inform each GO in its footprint of its determination, by [date] of each year for the winter season commencing in that calendar year."

   Communication of plan to operate

   In addition, to avoid the potential for disagreements over what constitutes a "plan" to operate, EOP-012-1 Section 4.2 could be revised to include communication of the GO's plan to its BA.

   Proposed language is attached in redline and clean format.

   Proposed language (redline)

   For purposes of this standard, the term "generating unit" means ~~those~~ each Bulk Electric System generator~~s~~ that has informed its Balancing Authority that it plans to operate during the upcoming winter season that has been ~~The winter season will be~~ determined by the generating unit's applicable Balancing Authority pursuant to EOP-011-3 Requirement R***. The term excludes those generators that do not operate during the winter season except when called upon by the Balancing Authority to be available during Capacity Emergencies or Energy Emergencies.

   Proposed language (clean)

   For purposes of this standard, the term "generating unit" means each Bulk Electric System generator that has informed its Balancing Authority that it plans to operate during the upcoming

winter season that has been determined by the generating unit's applicable Balancing Authority pursuant to EOP-011-3 Requirement R***. The term excludes those generators that do not operate during the winter season except when called upon by the Balancing Authority to be available during Capacity Emergencies or Energy Emergencies.

3. The SDT proposes to include as applicable Facilities in EOP-012-1 only those generating units that operate during the winter weather season, while exempting those units utilized for summer peaking purposes only (and without penalizing such units that may be called upon by the BA during winter weather in response to energy emergencies). Do you agree with the applicability of EOP-012-1 as drafted? If you do not agree, please provide recommended language for how to address from the standard's applicability consistent with the recommendations of The Report.
   ☒ Yes
   ☐ No

   Comments:

4. Does the proposed language in EOP-012-1 requirement R1 that require existing units to implement new freeze protection measures or modification of existing freeze protection measures, raise any stakeholder concerns? If so, please provide details of the concern, suggestions to the proposed language that addresses the risk presented in recommendation 1f, and if appropriate, technical or procedural justification.
   ☒ Yes
   ☐ No

   Comments: We have a number of concerns related to clarity and consistency both within R1, and between R1 and other draft requirements.

   "Designed and maintained to be capable of continuous operations"
   Our most significant concern is the proposed language in R1.1: "Each generating unit shall be designed and maintained to be capable of continuous operations…." This language is significantly more specific, as well as narrower, than Recommendation 1f, and could result in a GO being found noncompliant with R1 based on an R6 Forced Outage, on the theory that if a unit is "designed and maintained to be capable of continuous operation" at the minimum hourly temperature, then a Forced Outage meeting the criteria of R6 should be impossible. We do not believe that to be the SDT's (or FERC's) intent; R1.1-R1.3 should require GOs to implement freeze protection measures that they reasonably believe will be adequate, which they will supplement and improve pursuant to R6 and R1.4 if an event reveals a shortcoming. We suggest that R1.1 be revised as follows, which parallels the wording of R1.2 and R1.3 but uses the words "based on" to reflect the common understanding of "design basis": "The generating unit design shall be based on the documented minimum hourly temperature experienced at its location since 1/1/1975 or a lesser period if reliable data is not available to 1975." If the SDT does not accept this proposed revision, it should at minimum (1) insert language clarifying that experiencing an R6 event is not evidence that a GO is in violation of R1, and (2) delete the words "and maintain" from R1.1, because maintenance of freeze protection measures is already required by R3.3.

   Exceptions from R1.1-R1.3

We believe that the SDT intends that if an existing generator is developing and implementing a CAP pursuant to R1.4, or if an existing or new generator has determined (pursuant to R1.4.4 or R2, respectively) that technical, commercial, or operational constraints prevent it from meeting the criteria in R1.1-R1.3, then the GO will not be found noncompliant with R1.1-R1.3 on the basis of the issue(s) that are being addressed through the CAP or that are prevented by the constraint. But that intention is not expressed in the standard: R1 mandates "freeze protection measures based on" R1.1, R1.2, R1.3, *and* R1.4 as "minimum criteria," in all circumstances. And R1 does not even mention the possibility of *new* generators being unable to meet the criteria, as contemplated by R2. As currently written, a generator availing itself of R1.4 or R2 would be in violation of R1.1-R1.3. We have proposed language below clarifying that applicable generating units must meet the criteria in R1.1-R1.3 *except to the extent that* the GO is developing and implementing a CAP, or has documented technical, commercial, or operational constraints.

New vs. existing generators; combining R2 with R1.4.4

If the standard is to distinguish between "new" and "existing" generators—which we do not believe is necessary—then those terms must be defined for the purpose of this standard. In particular, the SDT would need to clarify two issues: (1) whether a generator's status as "new" or "existing" is fixed permanently based on some set date tied to the effectiveness of the standard (e.g. all generators in service on the state the standard becomes effective are "existing," and all that come online after that point are "new generators" throughout their lifespans), or whether the generator's status is instead determined at the time the standard is being applied (e.g. a generator that discovers the need for additional freeze control measures the day before it is to come online is a "new" generator, and thus must comply with R1.1-R1.3 immediately unless, per R2, a "technical, commercial, or operational constraint" prevents it from doing so, while a generator that makes the same discovery the day after beginning operations is "existing" and must develop and implement a CAP pursuant to R1.4). And (2) for a unit that is under development on the effective date of the standard (or other relevant date), or at the time it discovers the need for additional freeze control measures, at what point in the process of design, permitting, construction, and testing does a generator become "existing" rather than "new"?

It seems that the key difference in the treatment of "new" and "existing" generators in the draft standard is that "existing" generators develop a CAP if their freeze protection measures do not meet the criteria in R1.1-R1.3, and implement the CAP unless prevented by a technical commercial, or operational constraint, while "new" generators must meet the criteria in R1.1-R1.3 unless prevented by a constraint—in short, "new" generators skip the CAP step. This is not, in our view, a distinction that requires the definition of separate classes of generators. A simpler approach would be to revise R1 and merge it with R2 to provide three options for compliance for all generators: (1) if possible, have freeze control measures consistent with R1.1-R1.3; (2) if a generator's freeze control measures are not consistent with R1.1-R1.3, but it is feasible to supplement or modify them to make them consistent, develop and implement a CAP to do so; and (3) if freeze control measures consistent with R1.1-R1.3 are not feasible due to a technical, commercial, or operational constraints, document the constraint and review every five years. Please note that our proposed R1.5 below is based on the text of R2 and R2.1, not R1.4.4; as noted in response to Question 5 below, we suggest that R2.2's five-year review requirement be moved to R4, and thus have not included that subrequirement in our proposed redline of R1.

Lack of deadline in R1.4

Requirement R1.4 requires GOs to develop CAPs in some situations, but provides no deadline by which they must do so. The absence of a deadline places registered entities in the untenable position of having to guess, on a case-by-case basis, how long they have to develop a CAP before they would be deemed noncompliant. The standard should also specify which events trigger the need to develop a CAP pursuant to R1.4, i.e. under which circumstances a generator could need new or modified freeze protection measures. We believe that there are three situations with clear "trigger dates" in which a CAP could be required by R1.4: (1) implementation of this standard, where a generator's existing freeze protection measures do not meet the new criteria; (2) an R6 event, and (3) discovery of the need for changes to freeze protection measures through some other means, including an R4 review that results in either an updated minimum hourly temperature necessitating changes to freeze protection measures, or removal of a previously-documented technical, commercial, or operational constraint. (As explained below, we are suggesting that the CAP elements of R6 be moved to R1.4, leaving only the identification and analysis of the event in R6.) We suggest that CAPs developed when this standard first becomes effective, and in response to an R6 event, use the same deadline as currently proposed in R6: "150 days subsequent to the [event/effective date of this Requirement] or by July 1 that follows the [event/effective date of this Requirement], whichever is earlier." CAPs developed in response to some other means of discovery of the need for changes, including R4 updates, should be developed by July 1 of the year following the calendar year in which the review or other means of discovery takes place. This last class of CAPs should not use the same "by July 1 that follows the [completion of the review]" language as other CAPs, because doing so would force a GO that happened to complete a review or discover an issue in June to develop a CAP in less than a month. And development of such CAPs should have only a date deadline, not an alternative number of days; otherwise, a GO conducting numerous R4 reviews in a calendar year would have an incentive to delay completion of any reviews it thinks likely to result in the need for a CAP, in order to avoid having to develop CAPs at the same time it is continuing its review of other units).

Overlap between R1, R4, and R6

R1, R4, and R6 contain overlapping requirements; for the sake of clarity, and to avoid duplicative noncompliance situations, these overlaps should be eliminated and the relationships between the requirements clarified.

As currently drafted, R1 requires a CAP where a generator "requires either new freeze protection measures or modification of existing freeze protection measures." R4.3 requires each GO to "[r]eview whether its generating units have the freeze protection measures required to operate at the lowest temperature established pursuant to Requirement R1 and, if not, *implement appropriate modifications per the requirements of Part 1.4*." A GO that fails to "implement appropriate modifications per the requirements of Part 1.4" would thus be noncompliant with both R4.3 and R1.4. This issue could be remedied with a minor edit to R4.3: replace "and if not, implement appropriate modifications per the requirements of R1.4" with "If freeze protection measures must be supplemented or modified as a result of the updated lowest temperature, the requirements of Part 1.4 apply."

There is a similar overlap between R1.4 and R6, although R6 does not mention R1.4. R6 requires a GO that has experienced a qualifying event to develop a CAP meeting requirements essentially

identical to those of R1.4, with the addition of two analysis requirements ("[a] summary of the identified cause(s) for the equipment freezing event where applicable and any relevant associated data" and "[a] review of applicability to similar equipment at other generating units owned by the Generator Owner"). As drafted, an R6 event would trigger the requirements to develop a CAP pursuant to both R6 and R1.4, unless the R6 analysis identified no need for changes to freeze protection measures. As with the overlap between R1.4 and R4, a failure to develop a CAP would result in an entity being noncompliant with two essentially identical requirements. We suggest replacing R6.2.3 through R6.2.6 with a statement that "Corrective actions in response to an analysis required by R6, including new or modified freeze protection measures, are subject to the requirements of Part 1.4." Language should be added to R1.4 to indicate that it applies to the incorporation of lessons learned pursuant to R6; and the R6.2.3 requirement to identify corrective actions for "identified similar units" can be added to R1.4.1, e.g. "and, if applicable, any similar units identified pursuant to R6.2.2."

Proposed language is attached in redline and clean format.

Proposed language for R1

Proposed language (redline)

R1. Each Generator Owner shall ~~ensure generating units~~ implement freeze protection measures for each applicable generating unit based on the ~~following~~ minimum criteria set forth in R1.1 through R1.3, except to the extent that (i) it is developing and implementing a Corrective Action Plan (CAP) pursuant to R1.4 to enable a unit to meet the criteria set forth in R1.1 through R1.3, or (ii) it has determined, pursuant to R1.5, it is not able to implement freeze protection measures consistent with R1.1 through R1.3 or a CAP developed pursuant to R1.4 due to technical, commercial, or operational constraints: [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning, Operations Planning*]

1.1. ~~Each~~ The generating unit ~~shall be~~ design~~ed~~ shall be based on ~~and maintained to be capable of continuous operations at~~ the documented minimum hourly temperature experienced at its location since 1/1/1975 or a lesser period if reliable data is not available to 1975;

1.2. The generating unit design shall account for the cooling effect of wind; and

1.3. The generating unit design shall account for the impacts on operations due to precipitation (e.g.,sleet, snow, ice, and freezing rain); ~~and~~ or

1.4. For each ~~existing~~ generating unit whose freeze protection measures ~~that~~ require~~s~~ ~~either new freeze protection measures or modification of existing freeze protection measures~~ supplementation and/or modification in order to meet the criteria in R1.1 through R1.3, or based on lessons learned pursuant to R6, the Generator Owner shall develop ~~and implement~~ a Corrective Action Plan (CAP) by the deadline determined pursuant to R1.4.2 ~~which includes the following at a minimum:~~.

1.4.1. The CAP shall include the following at a minimum:

1.4.1.1. An identification of corrective action(s) for the affected unit(s) (and, if applicable, any similar units identified pursuant to R6.1.2), including any necessary modifications to the Generator Owner's cold weather preparedness plan(s);

1.4.1.2. A timetable for implementing the corrective action(s) from Part 1.4.1 which considers any technical, commercial, or operational constraints, as defined by the Generator Owner; and

1.4.1.3. An identification of any temporary operating limitations that would apply until execution of the corrective action(s) identified in the CAP~~; and.~~

1.4.2. The Generator Owner shall develop the CAP according to the applicable deadline from the following:

1.4.2.1. A Generator Owner that determines prior to the effective date of this Requirement that its existing freeze protection measures do not meet the criteria set out in R1.1 through R1.3 shall develop a CAP by no later than 150 days following the effective date of this Requirement, or the July 1 that follows the effective date of this Requirement, whichever is earlier.

1.4.2.2. A Generator Owner that has experienced an event meeting the criteria in R6 shall develop a CAP by no later than 150 days subsequent to the event or by July 1 that follows the event, whichever is earlier.

1.4.2.3. A Generator Owner that has determined in circumstances other than those described in R1.4.2.1 and R1.4.2.2 that its freeze protection measures require supplementation or modification, including but not necessarily limited to in response to an updated minimum hourly temperature pursuant to Requirement R4.3 or the removal of a technical, commercial, or operational constraint based on a review pursuant to Requirement R4.4, shall develop a CAP by no later than July 1 of the calendar year following the calendar year in which the Requirement R4 review was conducted or the need for the supplementation or modification was otherwise discovered, as applicable.

1.4.3. The Generator Owner shall implement the CAP according to the timetable established pursuant to R1.4.1.2, except to the extent that it is unable to implement the CAP due to a technical, commercial, or operational constraint documented per R1.5.

1.5. Each Generator Owner that is not able to implement (i) freeze protection measures consistent with R1.1 through R1.3 or (ii) a CAP developed pursuant to R1.4 for ~~new~~ a generating unit(s) ~~as required by Requirement R1~~ due to technical, commercial, or operational constraints as defined by the Generator Owner shall~~: *[Violation Risk Factor: Low] [Time Horizon: Long-term Planning]*~~

~~**1.5.1.** D~~ document its determination and the constraints on implementation.~~; and~~

Proposed language (clean)

R1. Each Generator Owner shall implement freeze protection measures for each applicable generating unit based on the minimum criteria set forth in R1.1 through R1.3, except to the extent that (i) it is developing and implementing a Corrective Action Plan (CAP) pursuant to R1.4 to enable a unit to meet the criteria set forth in R1.1 through R1.3, or (ii) it has determined, pursuant to R1.5, it is not able to implement freeze protection measures consistent with R1.1 through R1.3 or a CAP

developed pursuant to R1.4 due to technical, commercial, or operational constraints: [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning, Operations Planning*]

1.1. The generating unit design shall be based on the documented minimum hourly temperature experienced at its location since 1/1/1975 or a lesser period if reliable data is not available to 1975;

1.2. The generating unit design shall account for the cooling effect of wind; and

1.3. The generating unit design shall account for the impacts on operations due to precipitation (e.g., sleet, snow, ice, and freezing rain); or

1.4. For each generating unit whose freeze protection measures require supplementation and/or modification in order to meet the criteria in R1.1 through R1.3, or based on lessons learned pursuant to R6, the Generator Owner shall develop a Corrective Action Plan (CAP) by the deadline determined pursuant to R1.4.2.

1.4.1. The CAP shall include the following at a minimum:

1.4.1.1. An identification of corrective action(s) for the affected unit(s) (and, if applicable, any similar units identified pursuant to R6.1.2), including any necessary modifications to the Generator Owner's cold weather preparedness plan(s);

1.4.1.2. A timetable for implementing the corrective action(s) from Part 1.4.1 which considers any technical, commercial, or operational constraints, as defined by the Generator Owner; and

1.4.1.3. An identification of any temporary operating limitations that would apply until execution of the corrective action(s) identified in the CAP; and

1.4.2. The Generator Owner shall develop the CAP according to the applicable deadline from the following:

1.4.2.1. A Generator Owner that determines prior to the effective date of this Requirement that its existing freeze protection measures do not meet the criteria set out in R1.1 through R1.3 shall develop a CAP by no later than 150 days following the effective date of this Requirement, or the July 1 that follows the effective date of this Requirement, whichever is earlier.

1.4.2.2. A Generator Owner that has experienced an event meeting the criteria in R6 shall develop a CAP by no later than 150 days subsequent to the event or by July 1 that follows the event, whichever is earlier.

1.4.2.3. A Generator Owner that has determined in circumstances other than those described in R1.4.2.1 and R1.4.2.2 that its freeze protection measures require supplementation or modification, including but not necessarily limited to in response to an updated minimum hourly temperature pursuant to Requirement R4.3 or the removal of a technical, commercial, or operational constraint based on a review pursuant to Requirement R4.4, shall develop a CAP by no later than July 1 of the calendar year following the calendar year in which the Requirement R4 review was

conducted or the need for the supplementation or modification was otherwise discovered, as applicable.

1.4.3. The Generator Owner shall implement the CAP according to the timetable established pursuant to R1.4.1.2, except to the extent that it is unable to implement the CAP due to a technical, commercial, or operational constraint documented per R1.5.

1.5. Each Generator Owner that is not able to implement (i) freeze protection measures consistent with R1.1 through R1.3 or (ii) a CAP developed pursuant to R1.4 for a generating unit(s) due to technical, commercial, or operational constraints as defined by the Generator Owner shall document its determination and the constraints on implementation.

Alternative Suggestions

Alternative Revisions to R1.4

If the SDT retains R1.4.4 as a subrequirement under R1.4, it should revise R1.4 to state that the CAP must include "~~the following~~ at a minimum R1.4.1-R1.4.3." R1.4.4 is required only where a GO cannot implement identified corrective actions; it is not a minimum requirement of every CAP.

Alternative Revisions to R1.4.4

If the SDT does not consolidate R2 with R1.4.4 as suggested above, or if it retains the language of R1.4.4 rather than that of R2, it should at minimum eliminate unnecessary inconsistencies between the two requirements, and should delete from R1.4.4 (and from R6.2.6, if that separate subrequirement is retained) the words "that no revisions to the cold weather preparedness plan(s) are required," which are unnecessary and give the erroneous impression that R1.4.4 applies to situations where no changes are *needed*, as opposed to where changes cannot be made due to constraints. Our suggested revisions to the language of R1.4.4, to the extent that language is retained:

Redline

~~A declaration, w~~Where deemed appropriate by the Generator Owner, documentation that the Generator Owner is not able to implement ~~based on the review of Parts 1.4.1 through 1.4.3~~, ~~that~~ some or all of the corrective actions identified pursuant to Parts 1.4.1-1.4.3 ~~no revisions to the cold weather preparedness plan(s) are required and that~~ the ~~no further corrective actions will be taken. The Generator Owner shall document~~ due to technical, commercial, or operational constraints as defined by the Generator Owner. ~~as support for such declaration~~

Clean

Where deemed appropriate by the Generator Owner, documentation that the Generator Owner is not able to implement some or all of the corrective actions identified pursuant to Parts 1.4.1-1.4.3 due to technical, commercial, or operational constraints as defined by the Generator Owner.

Alternative elimination of duplication between R6 and R1.4

Finally, as also noted in response to Question 10 below, if the SDT retains a separate CAP requirement in R6, it must clarify in R1.4 that corrective actions in response to an R6 event are subject only to R6, not R1.4. Proposed language:

Redline

For each ~~existing~~ generating unit whose freeze protection measures ~~that~~ require~~s~~ ~~either new freeze protection measures or modification of existing freeze protection measures~~ supplementation and/or modification in order to meet the criteria in R1.1 through R1.3 (except when such supplementation or modification of freeze protection measures is undertaken in response to an R6 event, in which case the CAP requirements of R6 apply)…

Clean

For each generating unit whose freeze protection measures require supplementation and/or modification in order to meet the criteria in R1.1 through R1.3 (except when such supplementation or modification of freeze protection measures is undertaken in response to an R6 event, in which case the CAP requirements of R6 apply)…

5. The SDT has proposed that owners of new generation that determine that they are not able to implement freeze protection measures due to technical, commercial, or operational constraints review their determination every five years for EOP-012-1 Requirement R2. Is this separate requirement for "new" generation necessary, given that proposed Requirement R4 provides for Generator Owners to perform a similar review every five years to address the ongoing need to review freeze protection measures and historical cold weather temperatures? Please provide any explanation with your response.

☒ Yes
☐ No

Comments:

Requirement R4 as currently drafted would not require GOs to review constraints previously documented pursuant to R2 (or R1.4.4 or R6); the separate requirement is therefore necessary. As noted in our response to Question 4, we believe that the distinction between "new" and "existing" generators should be dropped, R1.4.4 deleted, and most of the text of R2 added (with appropriate edits) to R1 as R1.5. R2's five-year review requirement, however, should instead be moved to R4, as R4.4. Doing so would have two benefits: it would consolidate the five-year reviews in a single Requirement for ease of reference, and it would allow GOs to perform all of their five-year reviews on the same cycle, rather than potentially tracking multiple staggered cycles.

6. The Standard, as proposed, would require Generator Owners to develop plans for modifying generating units to operate to the minimum hourly temperature over the next five years after Commission approval. While Generator Owners identify those generating units that need modifications, develop corrective action plans, and implement modifications, it is important for the ERO Enterprise to have aggregated data about the status of Generation Owners' extreme cold weather preparedness for its generating units for use in its reliability oversight activities.

   The SDT believes that there is benefit to having the ERO Enterprise collect information on progress of Generator Owner plans for modifying generating units. The information could be collected through reporting under mandatory Reliability Standard requirements, through a Periodic Data Submittal under Section 400 of the Rules of Procedure (which may or may not be specified in the Compliance section of the standard), or through a request for data under Section 1600 of the Rules

of Procedure. Which of these options do you believe is the best procedural option for collecting this information?

Comments:
The information should be collected through a Periodic Data Submittal via the Align tool, which is already being used for other Periodic Data Submittals. It should not be a Reliability Standard requirement.

7. The drafting team has developed a proposed data collection framework which could form the basis for a periodic data submittal. If you have any comments or edits to the suggested language, please propose an alternative to address the identified risk during the phased-in compliance period.

Collection framework:

- The Generator Owner will submit an annual summary table **by October 1 of each year** to its Regional Entity regarding the status of its generating units (as that term is used in EOP-012-1 4.2 Facilities) having freeze protection measures in accordance with Requirements R1 and R2, along with a nine-year projection of status based on the timetables it has determined for Requirement R1. All projections will be based on the Generator Owner's timetables under Requirement R1.4.2; if timetables are not complete for all units, some MW can be designated as "to be determined." The summary table shall contain:
  - Status year (for current year, and future years 1-9);
  - Sum of capacities (in MW) of all generating units applicable under Facilities, section 4.2;
  - Sum of capacities (MW) of generating units meeting (for current year) and projected to meet (for each of the future years 1-9) the criteria of Requirement R1.1;
  - Sum of capacities (MW) of generating units not meeting (for current year) and projected to not meet (for each of the future years 1-9) the criteria of Requirement R1.1;
  - Sum of the capacities (MW) of existing generating units declared for no action under Requirement R1 (for current year, and projected for future years 1-9);
  - Sum of the capacities (MW) of new generating units identified for no action under Requirement R2 (for current year, and projected for future years 1-9).

Comments:

8. The SDT proposes that the modifications in EOP-011-3 and the newly drafted EOP-012-1 meet the key recommendations in The Report in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

☐ Yes
☐ No

Comments:

9. The SDT is proposing an 18-month implementation time frame for all revised and new requirements except EOP-012-1 Requirements R1 and R2 which have a 5-year implementation time

frame. Do you agree with this implementation time frame? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

☐ Yes
☐ No

Comments: TAPS had understood that the intent was for R2 and R4 (not R1) to have 5-year implementation periods, because both involve five-year reviews. If the SDT's intent is to give R1 a 5-year implementation period, and R4 an 18-month period, we would appreciate more information regarding the SDT's reasoning.

10. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale document, if desired.

Comments:
TAPS appreciates the opportunity to comment on the draft standards, and we thank the SDT for their hard work in developing these important standards on an accelerated timeline. With limited exceptions, we do not disagree with the substance of the proposed standards; we do, however, have some significant concerns regarding clarity and unintended consequences.

R4
Scope of R4.3; overlap between R4.3 and R1.4
We understand that the SDT intends R4.3 to apply only in the case where a GO's lowest temperature pursuant to R3.1 has changed since the last review, since the GO's existing freeze protection measures may not be adequate to meet the new, lower temperature. But the text as written requires a full self-audit of R1 compliance every 5 years regardless of whether the minimum temperature has changed. We suggest a minor edit to clarify the intended scope of R4.3. In addition, as noted above in response to Question 4, the current wording of R4.3 overlaps with the requirements of R1.4 and would lead to duplicative noncompliance; we suggest an edit to avoid that issue.

"Maintenance" of cold weather preparedness plan; possible combination of R4 with R3
R4 seems to set out, at least in part, how a GO "maintains" its plan, as required by R3. To avoid duplication, either the words "and maintain" should be deleted from R3, or R4 should be made a subrequirement of R3, prefaced by language along the lines of "Maintenance of the plan, which shall consist of the following reviews every five years:" Additional subrequirements could be added to ensure that the GO's 5-year review covers all aspects of its cold weather preparedness plan.

R6
Derate threshold
We have both substantive and clarity/consistency concerns regarding R6. With respect to the substance, the choice of a derate of 10% of the unit's capacity as the threshold does not seem to be supported by any technical analysis, and would be unreasonable in the case of small generators. If a derate threshold is retained, the SDT should consider making it "the greater of" some percent of the

unit's capacity or a MW value, e.g. "10% of the total capacity of the unit or 10 MW, whichever is greater," and/or tying it to reserve requirements.

Clarifications
"a specified start-up time"
Failure to synchronize "within a specified start-up time" is vague to the point of unenforceability: it *could* mean the minimum start-up time that the GO has communicated to its BA (assuming that every GO has done so), but there is nothing in the proposed text preventing an auditor from deciding that some other "specified time" should have been used. We suggest that "minimum start-up time" be added to the cold weather preparedness plan in R3 (possibly under R3.4.1), and then referenced in R6, i.e. "a start-up failure where the unit fails to synchronize within the start-up time specified in the applicable cold weather preparedness plan."

Other necessary clarifications
The text of R6 is unclear in other ways. In particular, (1) the word "event" is used in different places to mean either (i) a derate, failure to start, or Forced Outage, or (ii) the cause of the derate, failure to start, or Forced Outage; (2) it is syntactically ambiguous whether the two numbered preconditions in R6 ("for which (i) the apparent cause(s) of the event…") must be met with respect to all three types of issue, or only with respect to Forced Outages; and (3) "freezing of equipment" is vague: does it include icing, or only freezing of the liquid components of generation equipment? We propose edits to address the first two concerns, including making R6 an if-then statement with three preconditions; if all three are satisfied, the subrequirements are applicable. This does not change the meaning of the SDT's proposed text; it simply clarifies it by making all three preconditions explicit.

Possible merging of R6 CAP requirements into R1.4
Finally, as noted above in response to Question 4, R6 is duplicative of R1.4; we suggest replacing R6's CAP requirements with a reference to R1.4, leaving just the identification and analysis of events in R6.

Proposed text for R3, R4, and R6 is attached in redline and clean form.

Alternative proposals
If the SDT retains a separate CAP requirement in R6, it should at minimum, as suggested in our response to Question 4, clarify in R1 that corrective actions in response to an R6 event are subject only to R6, not R1.4; it should also revise R6.2.6 consistent with the changes to R1.4.4 that we proposed in response to Question 4.

VSLs
Our comments on the VSLs address the appropriateness of the proposed VSLs with respect to the Requirements language as proposed by the SDT; we have not, for the most part, suggested additional conforming changes in line with our suggested revisions to the Requirements.

R1 and R2: percentage of noncompliant units is an inappropriate metric

R1 and R2 have VSLs based on the percent of a GO's units for which it did not comply. This is unfair to smaller entities, who may have only one or two units. It is also not a reasonable metric: a GO with 100 units, that entirely disregarded R1.1-R1.3 with respect to 10 units, would be a Moderate VSL, while a GO with a single unit, for which it met the criteria in R1.1 and R1.2 but not R1.3, would be a Severe VSL. A more reasonable approach with respect to R1.1-R1.3 would be VSLs along the lines of "had freeze protection measures compliant with R1.1 but not R1.2 and/or R1.3," "had freeze protection measures, but measures were not sufficient to meet R1.1-R1.3," "had no freeze protection measures," etc. If the SDT nevertheless retains percentages of units in the VSLs, it must at minimum clarify the denominator for each—we believe that for R1, the intent is the GO's applicable units, and for R2, it is the GO's applicable new units for which it cannot meet the R1 criteria due to technical commercial, or operational constraints. And the SDT would need to clarify the time period over which the R2 percentage is taken—e.g. if a GO has 10 applicable units with R2 constraints, two of which were identified in each year over a five-year period, and it failed to document its determination and the constraints with respect to one of the last two units, is that a Severe VSL (because it was noncompliant with respect to 50% of its applicable units in that year), or Moderate (because it was noncompliant with respect to 10% of its total applicable units, or 10% of the applicable units identified over a 5-year period)?

R1.4: need for Low, Medium, and High VSLs

While R1.1-R1.3 have multiple VSLs (even though those VSLs are based on an inappropriate metric), R1.4 has only a single VSL—Severe—where the GO "did not develop or implement a CAP as required by Requirement R1." This is unreasonable; a GO might develop a CAP but only partially implement it, or develop and implement a partially-compliant CAP, etc. In addition, if R1.4 had a deadline, as we suggest it should in response to Question 4, then VSLs could be based on degrees of lateness.

R2 and R4: unintended ambiguity depending on date of discovery of noncompliance

The VSLs for R2 and R4 do reflect degrees of lateness, but they have another flaw: one possibility for a Severe VSL is "did not complete a review"/"does not have a completed review," while a "High" VSL is "was late by greater than 60 calendar days." But what if the noncompliance is discovered in an audit 50 days after the deadline? Is it a Medium VSL (because it is not yet more than 60 days late) or Severe (because the review isn't (yet) done)? The VSLs for R2 and R4 should be revised so that High has a maximum number of days, and Severe is "more than [x] days" late.

R4: omission of updating of plan from Low, Medium, and High VSLs

The text of Requirement R4 requires GOs to review and, if necessary, update their plans. The Low, Medium, and High VSLs for R4 refer only to completing the required review. The Severe VSL includes "The Generator Owner does not have a completed review. OR The Generator Owner did not update the cold weather preparedness plan." The (likely inadvertent) omission of "updating" from the lower VSLs suggests that being a day late in updating a cold weather preparedness plan is just as bad as being 6 months late. The words "and any necessary update(s)" should be added to Low through High VSLs.

R5: ambiguous application

Because the R5 VSLs are based on the *absolute number* of applicable personnel "at a single generating unit" that haven't been trained, "or" the *percent* of the GO's "total" applicable personnel that haven't been trained, there are plausible scenarios where the appropriate VSL would be unclear, or where a violation could be considered either multiple lower-VSL violations or a single higher-VSL violation. We believe that this problem could be remedied by (1) making the metrics consistent, i.e. either (a) "one applicable personnel; or 5% or less of its total applicable personnel," or (b) "one applicable personnel at a single generating unit; or 5% or less of applicable personnel at a single generating unit"; and (2) specifying whether to use the greater of, or lesser of, those two options in each case—for example, for GO with a single unit with two applicable personnel, one untrained person (low VSL) would be more than 15% of applicable personnel (severe VSL).

R6: percentage of R6 events is an inappropriate metric

Assuming that R6's CAP requirement is not moved to R1.4, the VSLs for R6 should differentiate based on whether each required CAP was (1) developed, fully or partially, (2) consistent with some or all of the criteria, and (3) timely (with gradations of lateness), etc. The proposed VSLs are instead based on the percent of a GO's "total events listed in R6" for which it did not develop a fully-compliant CAP. This is an unreasonable metric, and unfair to smaller entities with a small number of units: A GO that experienced 100 R6 events and did nothing at all with respect to 10 of them would be a Medium VSL, while a GO that experienced one R6 event, for which it developed a partially-compliant CAP, would be a Severe VSL. The SDT should not retain the proposed VSLs for R6, but if it does, it must at minimum indicate over what time period the percentage is calculated—is it one winter season? One calendar year? Some other time period?

Proposed language for R3, R4, and R6

Scope of R4.3; overlap between R4.3 and R1.4

Proposed language (redline)

If the lowest temperature established pursuant to Requirement R1 has been updated in the cold weather preparedness plan pursuant to R4.1, ~~R~~review whether its generating units have the freeze protection measures required to operate at the updated lowest temperature. ~~established pursuant to Requirement R1 and, if not, implement appropriate modifications per~~ If freeze protection measures must be supplemented or modified as a result of the updated lowest temperature, the requirements of Part 1.4 apply.

Proposed language (clean)

If the lowest temperature established pursuant to Requirement R1 has been updated in the cold weather preparedness plan pursuant to R4.1, review whether its generating units have the freeze protection measures required to operate at the updated lowest temperature. If freeze protection measures must be supplemented or modified as a result of the updated lowest temperature, the requirements of Part 1.4 apply.

"Maintenance" of cold weather preparedness plan; possible combination of R4 with R3

Proposed language (redline)

R3. Each Generator Owner shall implement and maintain one or more cold weather preparedness plan(s) for its generating units. The cold weather preparedness plan(s) shall include the following,

at a minimum: *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*

3.1. Documented minimum hourly temperature experienced at its location since 1/1/1975 or a lesser period if reliable data is not available to 1975;

3.2. Documented generating unit(s) freeze protection measures based on geographical location and plant configuration;

3.3. Annual inspection and maintenance of generating unit(s) freeze protection measures; and

3.4. Generating unit(s) cold weather data, to include:

3.4.1. Generating unit(s) operating limitations in cold weather to include:

3.4.1.1. Capability and availability;

3.4.1.2. Fuel supply and inventory concerns;

3.4.1.3. Fuel switching capabilities; and

3.4.1.4. Environmental constraints.

3.4.2. Generating unit(s) minimum:

- Design temperature;
- Historical operating temperature; or
- Current cold weather performance temperature determined by an engineering analysis.

3.5. Maintenance of the cold weather preparedness plan, which shall consist of the following reviews every five calendar years:

~~Once every five calendar years, each Generator Owner shall: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning, Real-Time Operations]*~~

3.5.1. Review the documented minimum hourly temperature developed pursuant to Part 3.1, and update the cold weather preparedness plan with the lowest temperature as necessary;

3.5.2. Review its documented cold weather minimum temperature contained within its cold weather preparedness plan(s) for its generating units, pursuant to Part 3.4.2; ~~and~~

3.5.3. Review whether its generating units have the freeze protection measures required to operate at the lowest temperature established pursuant to Requirement R1 and, if not, implement appropriate modifications per the requirements of Part 1.4.~~;~~;

3.5.4. Review procedures for annual inspection and maintenance of generating unit(s) freeze protection measures, and update as necessary; and

3.5.5. Review generating unit(s) cold weather operating limitations documented per R3.4.1, and update as necessary.

Proposed language (clean)

R3. Each Generator Owner shall implement and maintain one or more cold weather preparedness plan(s) for its generating units. The cold weather preparedness plan(s) shall include the following, at a minimum: *[Violation Risk Factor: High] [Time Horizon: Operations Planning and Real-time Operations]*

3.1. Documented minimum hourly temperature experienced at its location since 1/1/1975 or a lesser period if reliable data is not available to 1975;

3.2. Documented generating unit(s) freeze protection measures based on geographical location and plant configuration;

3.3. Annual inspection and maintenance of generating unit(s) freeze protection measures; and

3.4. Generating unit(s) cold weather data, to include:

3.4.1. Generating unit(s) operating limitations in cold weather to include:

3.4.1.1. Capability and availability;

3.4.1.2. Fuel supply and inventory concerns;

3.4.1.3. Fuel switching capabilities; and

3.4.1.4. Environmental constraints.

3.4.2. Generating unit(s) minimum:

- Design temperature;
- Historical operating temperature; or
- Current cold weather performance temperature determined by an engineering analysis.

3.5. Maintenance of the cold weather preparedness plan, which shall consist of the following reviews every five calendar years:

3.5.1. Review the documented minimum hourly temperature developed pursuant to Part 3.1, and update the cold weather preparedness plan with the lowest temperature as necessary;

3.5.2. Review its documented cold weather minimum temperature contained within its cold weather preparedness plan(s) for its generating units, pursuant to Part 3.4.2;

3.5.3. Review whether its generating units have the freeze protection measures required to operate at the lowest temperature established pursuant to Requirement R1 and, if not, implement appropriate modifications per the requirements of Part 1.4.~~.~~;

3.5.4. Review procedures for annual inspection and maintenance of generating unit(s) freeze protection measures, and update as necessary; and

3.5.5. Review generating unit(s) cold weather operating limitations documented per R3.4.1, and update as necessary.

R6

Proposed language (redline)

R6. ~~Each Generator Owner that owns~~ If (i) a generating unit ~~that~~ experiences an event ("event") consisting of ~~resulting in~~ (a) a derate of more than 10% of the total capacity of the unit or 10 MW, whichever is greater, for longer than four hours in duration, (b) a start-up failure where the unit fails to synchronize within the ~~specified~~ start-up time specified in the applicable cold weather preparedness plan, or (c) a Forced Outage; ~~for which~~ (ii) the apparent cause(s) of the event is ~~due to~~ freezing of the Generator Owner's equipment within the Generator Owner's control;~~,~~ and (iii) the ambient conditions at the site at the time of the event are at or above the temperature documented in Part 3.4.2, then ~~shall~~: *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*

6.1. No later than 150 days subsequent to the event or by July 1 that follows the event, whichever is earlier, the Generator Owner that owns the affected generating unit shall analyze and document:~~develop a CAP.~~

~~**6.2.** The CAP shall contain at a minimum:~~

6.2.1. A summary of the identified cause(s) for the freezing of equipment ~~freezing event~~ where applicable and any relevant associated data; and

6.2.2. A review of applicability to similar equipment at other generating units owned by the Generator Owner.

6.3. Corrective actions in response to the analysis required by R6.1, including new or modified freeze protection measures, are subject to the requirements of Part 1.4 and, if applicable, Part 1.5.

Proposed language (clean)

R6. If (i) a generating unit experiences an event ("event") consisting of (a) a derate of more than 10% of the total capacity of the unit or 10 MW, whichever is greater, for longer than four hours in duration, (b) a start-up failure where the unit fails to synchronize within the start-up time specified in the applicable cold weather preparedness plan, or (c) a Forced Outage; (ii) the apparent cause(s) of the event is freezing of the Generator Owner's equipment within the Generator Owner's control; and (iii) the ambient conditions at the site at the time of the event are at or above the temperature documented in Part 3.4.2, then: *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*

6.1. No later than 150 days subsequent to the event or by July 1 that follows the event, whichever is earlier, the Generator Owner that owns the affected generating unit shall analyze and document:

6.1.1. A summary of the identified cause(s) for the freezing of equipment where applicable and any relevant associated data; and

6.1.2. A review of applicability to similar equipment at other generating units owned by the Generator Owner.

6.2. Corrective actions in response to the analysis required by R6.1, including new or modified freeze protection measures, are subject to the requirements of Part 1.4 and, if applicable, Part 1.5.