NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Mapping Document

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

Summary

This mapping document maps the recommendations from The February 2021 Cold Weather Outages in Texas and the South Central United States report (The Report) to the creation of new standard EOP-012 as well as the revised EOP-011-3.

Recommendation 1d

Generator Owners that experience outages, failures to start, or derates due to freezing are to review the generating unit's outage, failure to start, or derate and develop and implement a corrective action plan (CAP) for the identified equipment, and evaluate whether the CAP applies to similar equipment for its other generating units. Based on the evaluation, the Generator Owner will either revise its cold weather preparedness plan to apply the CAP to the similar equipment, or explain in a declaration (a) why no revisions to the cold weather preparedness plan are appropriate, and (b) that no further corrective actions will be taken. The Standard Drafting Team should specify the specific timing for the CAP to be developed and implemented after the outage, derate or failure to start, but the CAP should be developed as quickly as possible, and be completed by no later than the beginning of the next winter season.

Standard: EOP-012-1		
Requirement in Approved Standard	**Transition to New Standard or Other Action**	**Description and Change Justification**
This requirement does not exist in an already approved standard. It is new to EOP-012-1.	**EOP-012-1 Requirement R6** **R6.** Each Generator Owner that owns a generating unit that experiences a Generator Cold Weather Reliability Event shall develop a CAP, within 150 days or by July 1, whichever is earlier, that contains at a minimum: *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*	This requirement addresses recommendation 1d for Generator Owners to develop and implement a CAP following an outage, failure to start, or derate. CAPs will be required any time a generating unit experiences a Generator Cold Weather Reliability Event. The CAP requirement thus applies to any forced outage due to freezing, regardless of duration. Derates which are short-lived or of small capacity impact are excluded from the Generator Cold Weather Reliability Event definition, and therefore from the CAP requirement. R6 requires the GO to act within 150 days or July 1 to develop

	6.1 A summary of the identified cause(s) for the Generator Cold Weather Reliability Event where applicable and any relevant associated data; **6.2** A review of applicability to similar equipment at other generating units owned by the Generator Owner; **6.3** An identification of any temporary operating limitations or impacts to the cold weather preparedness plan, that would apply until execution of the corrective action(s) identified in the CAP. **New Glossary Definition, Generator Cold Weather Reliability Event** Generator Cold Weather Reliability Event - One of the following events: (1) a forced derate of more than 10% of the total capacity of the unit and exceeding 20 MWs for longer than four hours in duration; (2) a start-up failure where the unit fails to synchronize within a specified start-up time; or (3) a Forced Outage, for which the apparent cause(s) is due to freezing of equipment within the Generator Owner's	the CAP. This timeframe was chosen to allow Generator Owners to review multiple events holistically following a winter season, and create one CAP for equipment with common failure causes while meeting the recommendation charge to be "developed as quickly as possible".

	control and the dry bulb temperature at the time of the event was at or above the Extreme Cold Weather Temperature.	
This requirement does not exist in an already approved standard. It is new to EOP-012-1.	**R7.** Each Generator Owner shall: *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]* **7.1** Implement each CAP developed pursuant to Requirements R2, R4, or R6, or explain in a declaration why corrective actions are not being implemented due to any technical, commercial, or operational constraints as defined by the Generator Owner. **7.2** Update each CAP if actions or timetables change, until completed.	The recommendation in 1d continues to be addressed through Requirement R7. Generator Owners shall implement any CAPs for equipment freezing events developed under Requirement R6 or explain in a declaration why corrective actions are not being implemented. The declaration in Requirement R7 applies to any CAP developed in R2 (existing generators freeze protection measures), R4 (5-year review) or R6 (CAP for Cold Weather Reliability Event).

Recommendation 1e

To revise EOP-011-2, R8, to require Generator Owners and Generator Operators are to conduct annual unit-specific cold weather preparedness plan training

Standard: EOP-012-1		
Requirement in Approved Standard	**Transition to New Standard or Other Action**	**Description and Change Justification**
EOP-011-2 Requirement R8 **R8.** Each Generator Owner in conjunction with its Generator Operator shall identify the entity responsible for providing the generating unit-specific training, and that identified entity shall provide the training to its maintenance or operations personnel responsible for implementing cold weather preparedness plan(s) developed pursuant to Requirement R7.	**EOP-012-1 Requirement R5** **R5.** Each Generator Owner in conjunction with its Generator Operator shall identify the entity responsible for providing the generating unit-specific training, and that identified entity shall provide annual training to its maintenance or operations personnel responsible for implementing the cold weather preparedness plan(s) developed pursuant to Requirement R3.	EOP-011-2 Requirement R8 was moved to new standard EOP-012-1 Requirement R5. The language remains the same with the addition of the word annual to meet the charge in recommendation 1e of The Report.

Recommendation 1f

To require Generator Owners to retrofit existing generating units, and when building new generating units, to design them to operate to a specified ambient temperature and weather conditions (e.g., wind, freezing precipitation). The specified ambient temperature and weather conditions should be based on available extreme temperature and weather data for the generating unit's location.

Standard: EOP-012-1		
Requirement in Approved Standard	**Transition to New Standard**	**Description and Change Justification**
This requirement does not exist in an already approved standard. It is new to EOP-012-1.	**EOP-012-1 Requirement R1** **R1.** For each generating unit(s) with a commercial operation date subsequent to [Effective Date of this requirement], the Generator Owner shall: [*Violation Risk Factor: Medium*] [*Time Horizon: Long-term Planning, Operations Planning*] • Implement freeze protection measures that provide capability to operate for a period of not less than twelve (12) continuous hours at the Extreme Cold Weather Temperature for the unit(s), assuming a concurrent twenty (20) mph wind speed on any exposed Generator Cold Weather Critical Components; or • Explain in a declaration, any technical, commercial, or operational constraints as defined by the Generator Owner that preclude the ability to implement appropriate freeze protection measures to provide capability of operating for twelve (12) hours at the documented Extreme Cold Weather Temperature.	This requirement addresses new build generation to have freeze protection measures to meet the criteria listed. This criteria include operating for 12 hours at the Extreme Cold Weather Temperature which is based on the available temperature and weather data for the unit's location, and accounting for the cooling effects of wind, as suggested by the recommendation. If the unit cannot implement appropriate freeze protection measures it must be explained in a declaration. Following regulatory approval, the bracketed language, [Effective Date of this requirement], will be replaced with the date by which entities shall be compliant with this requirement. It is the intent of the Project 2021-07 drafting team that this date will remain static in any future versions of the EOP-012 standard, to distinguish between requirements applicable to generation that exists at the time the first version of the standard becomes effective, and requirements applicable to generation that comes online after the first standard becomes effective, unless a future drafting team determines an alternative approach is appropriate.

This requirement does not exist in an already approved standard. It is new to EOP-012-1.	**R2.** For each generating unit(s) in commercial operation prior to [Effective Date of this requirement], the Generator Owner shall ensure its generating unit(s) add new or modify existing freeze protection measures as needed to provide the capability to operate for a period of not less than one (1) hour at the unit(s) Extreme Cold Weather Temperature. Generating unit(s) that are not capable of operating for one (1) hour at its Extreme Cold Weather Temperature shall develop a Corrective Action Plan (CAP) for the identified issues, including identification of any needed modifications to the cold weather preparedness plan required under Requirement R3. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning, Operations Planning]*	This requirement addresses existing generation to have freeze protection measures to provide for the capability to operate for one hour at the calculated Extreme Cold Weather temperature. If the unit cannot meet these criteria, then a CAP is required to address the identified issues. FERC staff from the Joint Inquiry Report team clarified to the SDT that the reliability goal of the recommendation for existing generating units is to have the necessary freeze protection measures to be able to operate at extreme cold temperatures and weather for the generating unit's location. For example, those measures may consist of existing or new, permanent and/or temporary measures to maintain operation during extreme cold temperatures. Following regulatory approval, the bracketed language, [Effective Date of this requirement], will be replaced with the date by which entities shall be compliant with this requirement. It is the intent of the Project 2021-07 drafting team that this date will remain static in any future versions of the EOP-012 standard, to distinguish between requirements applicable to generation that exists at the time the first version of the standard becomes effective, and requirements applicable to generation that comes online after the first standard becomes effective, unless a future drafting team determines an alternative approach is appropriate.

Recommendation 1j

In minimizing the overlap of manual and automatic load shed, the load shed procedures of Transmission Operators, Transmission Owners (TOs) and Distribution Providers (DPs) should separate the circuits that will be used for manual load shed from circuits used for underfrequency load shed (UFLS)/undervoltage load shed (UVLS) or serving critical load. UFLS/UVLS circuits should only be used for manual load shed as a last resort and should start with the final stage (lowest frequency).

Standard: EOP-011-3		
Requirement in Approved Standard	**Transition to New Standard or Other Action**	**Description and Change Justification**
EOP-011-2 Requirement R1 Part 1.2.5 **1.2.5** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and	**EOP-011-3 Requirement R1 Part 1.2.5** **1.2.5.** Operator-controlled manual Load shedding during an Emergency that accounts for each of the following: **1.2.5.1.** Provisions for manual Load shedding capable of being implemented in a timeframe adequate for mitigating the Emergency; **1.2.5.2.** Provisions to minimize the overlap of circuits that are designated for manual Load shed and circuits that serve designated critical loads; **1.2.5.3.** Provisions to minimize the overlap of circuits that are designated for manual Load shed and circuits that are utilized for underfrequency load shed (UFLS) or undervoltage load shed (UVLS); and **1.2.5.4.** Provisions for limiting the	The second posting does not include any changes to EOP-011-3 since the initial posting. EOP-011-3 adds additional provisions and clarifies what the TOP must include in their Operating Plan to mitigate operating Emergencies. Specific clarifications are to minimize the overlap of manual Load shed and circuits that serve designated critical loads; minimize the overlap of circuits that are designated for manual Load shed and circuits that are utilized for underfrequency load shed (UFLS) or undervoltage load shed (UVLS); and provisions for limiting the utilization of UFLS or UVLS circuits for manual Load shed. The SDT elected to keep the phase “minimize the overlap” instead of moving to language that specifically requires the separation of circuits in recognition of the fact that it is not always practical or warranted to completely separate circuits used for each of these purposes.

	utilization of UFLS or UVLS circuits for manual Load shed to situations where warranted by system conditions.	
EOP-011-2 Requirement R2 Part 2.2.8 **2.2.8.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and	**EOP-011-3 Requirement R2 Part 2.2.8** **2.2.8.** Provisions for Transmission Operators to implement operator-controlled manual Load shed in accordance with Requirement R1 Part 1.2.5; and	The second posting does not include any changes to EOP-011-3 since the initial posting. This part of R2 has been modified to refer back to Requirement R1, Part 1.2.5 in an effort to clarify that the Transmission Operator is responsible for addressing operator-controlled manual load shed requirements in their Operating Plan. Balancing Authorities are expected to specify manual load shed requirements for Transmission Operators within their areas in accordance with Part 1.2.5, but do not have the control or visibility to design and implement manual load shed programs and UFLS/UVLS programs that meet the requirements of Part 1.2.5.