Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is the first-second draft of the proposed standard for a formal 30-day comment period.

Completed Actions	Date
Standards Committee approved Standard Authorization Request (SAR) for posting	11/17/2021
SAR posted for comment	11/22/21 – 12/21/21
30-day formal or informal comment period with ballot	5/19/22 – 6/21/22

Anticipated Actions	<u>Date</u>
30-day formal or informal comment period with additional ballot	8/3/22-9/1/22
10-day final ballot	September 2022
Board adoption	October 2022

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

Generator Cold Weather Critical Component - Any generating unit component or associated fixed fuel supply component, that is under the Generator Owner's control and is susceptible to freezing issues, the occurrence of which would likely lead to a Generator Cold Weather Reliability Event.

<u>Extreme Cold Weather Temperature</u> – The temperature equal to the lowest 0.2 percentile of the hourly temperatures measured in December, January, and February from 1/1/2000 through the date the temperature is calculated.

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 <u>equipment within the Generator</u>

<u>Owner's control</u> and the dry bulb temperature at the time of the event was at or above the Extreme Cold Weather Temperature.

A. Introduction

1. Title: Extreme Cold Weather Preparedness and Operations

2. Number: EOP-012-1

3. Purpose: To address the effects of operating in extreme cold weather by ensuring each Generator Owner has developed and implemented plan(s) to mitigate the reliability impacts of extreme cold weather on its generating units.

- 4. Applicability:
 - 4.1. Functional Entities:
 - 4.1.1. Generator Owner
 - **4.1.2.** Generator Operator
 - 4.2. Facilities: For purposes of this standard, the term "generating unit" means those Bulk Electric System generators that plan to operate during the winter season. The winter season will be determined by the generating unit's applicable Balancing Authority. 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. subject to these requirements means:
 - **4.2.1** A Bulk Electric System generating unit:
 - <u>**4.2.1.1**</u> That commits or is obligated to serve a Balancing Authority load pursuant to an Open Access Transmission Tariff (OATT) or other contractual arrangement;
 - 4.2.1.1.1 The term excludes a Bulk Electric System generating unit that is typically not available at or below thirty-two (32) degrees

 Fahrenheit (zero degrees Celsius) for any continuous run of more than four hours. The exclusion applies even when such BES generator has been called to assist in the mitigation of BES Emergencies, Capacity Emergencies, or Energy Emergencies during periods at or below 32 degrees

 Fahrenheit.
 - **4.2.1.2** That is identified as a Blackstart Resource.
- **5. Effective Date:** See Implementation Plan for Project 2021-07.

B. Requirements and Measures

R1. Each For each generating unit(s) with a commercial operation date subsequent to [Effective Date of this requirement], the Generator Owner shall-ensure generating units implement freeze protection measures based on the following minimum criteria: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning, Operations Planning]

- 1.1. Each generating unit shall be designed 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;
- 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
- 1.4. For each existing generating unit that requires either new freeze protection measures or modification of existing freeze protection measures, the Generator Owner shall develop and implement a Corrective Action Plan (CAP) which includes the following at a minimum:
 - **1.5.0.** An identification of corrective action (s) for the affected unit(s), including any necessary modifications to the Generator Owner's cold weather preparedness plan(s);
 - **1.6.0.** 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:
 - **1.7.0.** An identification of any temporary operating limitations that would apply until execution of the corrective action(s) identified in the CAP; and
- 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
- A declaration, where deemed appropriate by the Generator Owner based on the
 review of Parts 1.4.1 through 1.4.3, that no revisions to the cold weather
 preparedness plan(s) are required and that no further corrective actions will be
 taken. The Generator Owner shall document Explain in a declaration, any
 technical, commercial, or operational constraints as defined by the Generator
 Owner as support for such declaration 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..
- M1. Each Generator Owner will have dated evidence that demonstrates it has the capability to operate in accordance with Requirement R1. Acceptable evidence may include, but is not limited to, the following (electronic or hardcopy format):

 Documentation of cold weather preparedness plan, documentation of design features. Any declaration that contains dated documentation to support constraints identified by the Generator Owner.
- **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]

- M1.M2. Each Generator Owner will have dated evidence that demonstrates it has freeze protection measures for its unit(s) in accordance with R1R2, or it has developed a CAP for the identified issues. Acceptable evidence may include the following (electronic or hardcopy format): Documentation of extreme temperature used for the freeze protection design Identification of generating units minimum temperature per Part 3.5.2 which is equal to or less than the unit's Extreme Cold Weather Temperature, documentation of freeze protection measures, Facility-cold weather preparedness plan, and CAP(s).
- R3. Each Generator Owner that is not able to implement freeze protection measures for new 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]
 - 4.0. Document its determination and the constraints on implementation; and
 - **5.0.** Review its determination every five calendar years to determine whether the documented constraints on implementation remain applicable.
- M6. Each Generator Owner will have dated evidence that demonstrates it documented constraints on implementation of freeze protection measures and conducted a review of its units in accordance with Requirement-R2. Acceptable evidence may include the following dated documentation (electronic or hardcopy format): Documentation of technical, commercial, or operational constraint. Documentation of five calendar year reviews as applicable.
- R7.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;
 - 3.1 The Extreme Cold Weather Temperature for their unit(s) including the calculation date and source of temperature data;
 - **3.2** Documentation identifying the Generator Cold Weather Critical Components;

- <u>Weather Critical Components which may include measures used to reduce the cooling effects of wind determined necessary by the Generator Owner to protect against heat loss, and where applicable, the effects of freezing precipitation (e.g., sleet, snow, ice, and freezing rain);</u>
- Annual inspection and maintenance of generating unit(s) freeze protection measures; and
- 3.43.5 Generating unit(s) cold weather data, to include:
 - **3.4.1**3.5.1 Generating unit(s) operating limitations in cold weather to include:

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3.4.1.13.5.1.1 Capability and availability;
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- **3.4.1.2**3.5.1.2 Fuel supply and inventory concerns;
- 3.4.1.33.5.1.3 Fuel switching capabilities; and
- **3.4.1.43.5.1.4** Environmental constraints.
- **3.4.23.5.2** Generating unit(s) minimum:
 - Design temperature;
 - Historical operating temperature; or
 - Current cold weather performance temperature determined by an engineering analysis.
- M2.M3. Each Generator Owner will have evidence documenting that its cold weather preparedness plan(s) was implemented and maintained in accordance with Requirement R3.
- **R8.R4.** Once every five calendar years, each Generator Owner shall for each generating unit: [Violation Risk Factor: Low] [Time Horizon: Operations Planning, Real-Time Operations]
 - **4.1** Review the documented minimum hourly temperature developed pursuant to Part 3.1Calculate the Extreme Cold Weather Temperature, and update the cold weather preparedness plan with the lowest if this temperature as necessary is now lower than the previous lowest calculation;
 - **4.2** Review its documented <u>cold weather generating unit(s)</u> minimum temperature contained within its cold weather preparedness plan(s) <u>for its generating units</u>, pursuant to Part <u>3.4.23.5.2</u>; and
 - 4.3 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 1.4Extreme Cold Weather Temperature pursuant to R1 or R2 as applicable, and if not develop a CAP for the identified issues, including

- identification of any needed modifications to the cold weather preparedness plan required under Requirement R3.
- M3.M4. Each Generator Owner will have evidence documenting that it reviewed documented temperature data and updated its cold weather preparedness plan(s) in accordance with Requirement R4.
- R9.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. [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning, Operations Planning]
- M4.M5. Each Generator Operator or Generator Owner will have documented evidence that the applicable personnel completed annual training of the Generator Owner's cold weather preparedness plan(s). This evidence may include, but is not limited to, documents such as personnel training records, training materials, date of training, agendas or learning objectives, attendance at pre-work briefings, review of work order tasks, tailboards, attendance logs for classroom training, and completion records for computer-based training in fulfillment of Requirement R5.
- R10.R6. Each Generator Owner that owns a generating unit that experiences an event resulting in a derate of more than 10% of the total capacity of the unit for longer than four hours in duration, a start-up failure where the unit fails to synchronize within a specified start-up time, or a Forced Outage for which (i) the apparent cause(s) of the event is due to freezing of the Generator Owner's equipment within the Generator Owner's control, and (ii) the ambient conditions at the site at the time of the event are at or above the temperature documented in Part 3.4.2 shalla 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]
 - **1.1.** No later than 150 days subsequent to the event or by July 1 that follows the event, whichever is earlier, develop a CAP.
 - 1.2. The CAP shall contain at a minimum:
 - 6.36.1 A summary of the identified cause(s) for the equipment freezing event Generator Cold Weather Reliability Event where applicable and any relevant associated data;
 - 6.46.2 A review of applicability to similar equipment at other generating units owned by the Generator Owner;
 - An identification of corrective action(s) for the affected unit(s) and identified similar units, including any necessary modifications to the Generator Owner's any temporary operating limitations or impacts to the cold weather

- preparedness plan(s);, that would apply until execution of the corrective action(s) identified in the CAP.
- A timetable for implementing the identified corrective action(s) from Part
 6.2.3 which considers any technical, commercial, or operational
 constraints as defined by the Generator Owner;
- An identification of any temporary operating limitations that would apply until execution of the corrective action(s) identified in the CAP; and
- A declaration, where deemed appropriate by the Generator Owner based on the review of Parts 6.2.1 through 6.2.5 that no revisions to the cold weather preparedness plan are required and that no further corrective actions will be taken. The Generator Owner shall document technical, commercial, or operational constraints as defined by the Generator Owner as support for such declaration.
- M9.M6. Acceptable evidence for these requirements may include, but is not limited to, the following dated documentation (electronic or hardcopy format): CAP(s) and updated cold weather preparedness plan(s) where indicated as needed by the CAP.
- **R7.** Each Generator Owner shall: [Violation Risk Factor: Medium] [Time Horizon: Longterm 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.
- M7. Each Generator Owner shall have dated evidence that demonstrates it implemented each CAP, including updating actions or timetables, or has explained in a declaration why corrective actions are not being implemented. Acceptable evidence for Requirement R7 may include, but is not limited to the following dated documentation (electronic or hardcopy format): records that document the implementation of each CAP and the completion of actions for each CAP including revision history of each CAP. Evidence may also include work management program records, work orders, and maintenance records. Any declaration shall contain dated documentation to support constraints identified by the Generator Owner.

C. Compliance

- 1. Compliance Monitoring Process
 - **1.1. Compliance Enforcement Authority:** "Compliance Enforcement Authority" (CEA) means NERC or the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring

- and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.
- **1.2. Evidence Retention:** The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The applicable entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- R1. The Generator Owner shall keep data or evidence to show compliance for three years or until any Corrective Action Plan under Part 1.4 is complete, whichever timeframe is greater, for Requirement-R1 and Measure M1.
- The Generator Owner shall keep data or evidence to show compliance for three years for Requirement R2R1, R3, and R5 and Measure M2M1, M3, and M5.
- The Generator Owner shall keep data or evidence to show compliance for three years, or until any Corrective Action Plan under Requirement R2 is complete, whichever timeframe is greater, for Requirement R2 and Measure M2.
- The Generator Owner shall retain the current cold weather preparedness
 plan(s), as evidence of review or revision history, plus each version issued
 since the last audit and evidence of compliance since the last audit for
 Requirement R4 and Measure M4. The Generator Owner shall retain any
 Corrective Action Plans under Requirement R4 Part 4.3 for three years or
 until the Corrective Action Plan is complete, whichever timeframe is greater.
- The Generator Owner shall keep data or evidence to show compliance for three years, or until any Corrective Action Plan under 6.2 Requirement R6 is complete, whichever timeframe is greater, for Requirement R6 and Measure M6.
- The Generator Owner shall keep data or evidence to show compliance for three years, or until any Corrective Action Plan is complete, whichever time frame is greater, for Requirement R7 and Measure M7.
- 1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, "Compliance Monitoring and Enforcement Program" refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

- "	Violation Severity Levels			
R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	The Generator Owner did not have freeze protection measure(s) meeting the criteria in Requirement R1 Parts 1.1 – 1.3 for up to 5% or less of its units. OR The Generator Owner did not explain in a declaration any technical, commercial, or operational constraints that preclude the ability to implement appropriate freeze protection measures for 5% or less of its units.	The Generator Owner did not have freeze protection measure(s) meeting the criteria in Requirement R1 Parts 1.1 – 1.3 for more than 5%, but less than or equal to 10% of its units. OR The Generator Owner did not explain in a declaration any technical, commercial, or operational constraints that preclude the ability to implement appropriate freeze protection measures for more than 5%, but less than or equal to 10% of its units.	The Generator Owner did not have freeze protection measure(s) meeting the criteria in Requirement R1 Parts 1.1 – 1.3 for more than 10%, but less than or equal to 20% of its units. OR The Generator Owner did not explain in a declaration any technical, commercial, or operational constraints that preclude the ability to implement appropriate freeze protection measures for more than 10%, but less than or equal to 20% of its units.	The Generator Owner did not have freeze protection measure(s) meeting the criteria in Requirement R1 Parts 1.1 – 1.3 for more than 20% of its units; OR The Generator Owner did not develop or implement a CAP as required by Requirement R1explain in a declaration any technical, commercial, or operational constraints that preclude the ability to implement appropriate freeze protection measures for more than 20% of its units.
R2.	The Generator Owner completed the review required in Requirement R2, but was late by 30 calendar days or less. OR The Generator Owner did not document its determination and the constraints described	The Generator Owner completed the review required did not have freeze protection measure(s) meeting the criteria in Requirement R2, but was late by greater for more than 30 calendar days5%, but less than or equal to 60 calendar days10% of its units.	The Generator Owner completed the review required in Requirement R2, but was late by greater than 60 calendar days. OR The Generator Owner did not document its determination and the constraints described	The Generator Owner did not complete a review.have freeze protection measure(s) meeting the criteria OR The Generator Owner did not document its determination and the constraints described

	have freeze protection measure(s) meeting the criteria in Requirement R2 Part 2.1 for up to 5% or less of its units. OR The Generator Owner did not develop a CAP as required by Requirement R2 for 5% or less of its units.	OR The Generator Owner did not document its determination and the constraints described in develop a CAP as required by Requirement R1 Part 2.1 R2 for more than 5%, but less than or equal to 10% of its units.	have freeze protection measure(s) meeting the criteria in Requirement R1 Part 2.1 R2 for more than 10%, but less than or equal to 20% of its units. OR The Generator Owner did not develop a CAP as required by Requirement R2 for more than 10%, but less than or equal to 20% of its units.	in Requirement R1 Part 2.1-R2 for more than 20% of its units. OR The Generator Owner did not develop a CAP as required by Requirement R2 for more than 20% of its units.
R3.	The Generator Owner implemented a cold weather preparedness plan(s), but failed to maintain it.	The Generator Owner's cold weather preparedness plan failed to include one of the applicable Parts within Requirement R3.	The Generator Owner had and maintained a cold weather preparedness plan(s), but failed to implement it. OR The Generator Owner's cold weather preparedness plan failed to include two of the applicable requirement parts within Requirement R3.	The Generator Owner does not have cold weather preparedness plan(s). OR The Generator Owner has a 's cold weather preparedness plan, but failed to include any three or more of the applicable requirement parts within Requirement R3.
R4.	The Generator Owner completed the review actions required in Requirement R4, but was late by 30 calendar days or less.	The Generator Owner completed the review actions required in Requirement R4, but was late by greater than 30 calendar days, but less than or equal to 60 calendar days.	The Generator Owner's review failed to include complete one of the applicable requirement parts in Requirement R4 Parts 4.1 through 4.3; OR The Generator Owner completed the review actions	The Generator Owner's review failed to include complete two or more of the applicable requirement parts in Requirement R4 Parts 4.1 through 4.3;

			required in Requirement R4, but was late by greater than 60 calendar days.	The Generator Owner does not have a completed review. OR The Generator Owner did not update the cold weather preparedness plan.
R5.	The Generator Owner or Generator Operator failed to provide annual generating unit-specific training as described in Requirement R5 to the greater of: • one applicable personnel at a single generating unit; or • 5% or less of its total applicable personnel.	The Generator Owner or Generator Operator failed to provide annual generating unit-specific training as described in Requirement R5 to the greater of: • two applicable personnel at a single generating unit; or • more than 5%, but less than or equal to 10% of its total applicable personnel.	The Generator Owner or Generator Operator failed to provide annual generating unit-specific training as described in Requirement R5 to the greater of: three applicable personnel at a single generating unit; or more than 10%, but less than or equal to 15% of its total applicable personnel.	The Generator Owner or Generator Operator failed to provide annual generating unit-specific training as described in Requirement R5 to the greater of: • four applicable personnel at a single generating unit; or • more than 15% of its total applicable personnel.
R6.	The Generator Owner did not develop a CAP meeting the elements in Requirement R6 parts 6.1 and 6.2 for 5% or less of its total events listed developed a CAP, but not within 150 days or by July 1 as required in Requirement R6.	The Generator Owner-did not develop a CAP meeting 's CAP failed to comply with one of the elements in Requirement R6-parts 6.1 and 6.2 for more than 5%, but less than or equal to 10% of its total events listed in Requirement R6, Parts 6.1 through 6.3.	The Generator Owner-did not develop a CAP meeting 's CAP failed to comply with two of the elements in Requirement R6-parts 6.1 and 6.2 for more than 10%, but less than or equal to 15% of its total events listed in Requirement R6, Parts 6.1 through 6.3.	The Generator Owner's CAP failed to comply with three of the elements in Requirement R6, Parts 6.1 through 6.3. OR The Generator Owner did not develop a CAP meeting the elements in Requirement R6 parts 6.1 and 6.2 for more than 15% of its total events

				listed in Requirement R6.as required by Requirement R6.
<u>R7.</u>	The Generator Owner implemented a CAP or explained in a declaration why corrective actions are not being implemented, but failed to update the CAP when actions or timetables changed, in accordance with Requirement R7.	N/A	N/A	The Generator Owner failed to implement a CAP or explain in a declaration why corrective actions are not being implemented in accordance with Requirement R7.

D. Regional Variances

None.

E. Associated Documents

Implementation Plan

Version History

Version	Date	Action	Change Tracking
1	TBD	Drafted by Project 2021-07	New