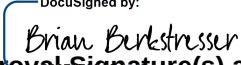


Empire Corporate Generation Winterization Policy



Title: Empire Corporate Generator Winterization Policy	Revision: D	Author: C. Landoll, Asset Manager
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Applicable NERC Standard(S): EOP-12-2 Extreme Cold Weather Preparedness and Operations		

Revision History

Revision	Date	Changes	Approved By
A	12/13/2022	Original	Brian Mushimba
B	11/13/2023	Reviewed Rev. A	Brian Berkstresser
C	2/18/2024	Reviewed Rev. B	Brian Berkstresser
D	9/26/2024	Transitioned from EOP-011-2	Brian Berkstresser

- 1.0 **PURPOSE:** The purpose of this policy is to ensure that each of Liberty Utilities Central Region Generating Plants have plans and procedures in place to operate reliably and safely during winter weather conditions by incorporating best industry practices applied to each specific plant configuration.

Due to the impacts across the Bulk Electric System (BES) from the ERCOT event of 1989 to Winter Storm Gerri in 2024, it has become necessary to formalize policy and procedures necessary to ensure continuous, safe, and reliable operation of the power generating station(s) during times of extreme winter weather. Specifically, the requirements of NERC Reliability Standard EOP-012-2, which became effective on 10/01/2024.

- 2.0 **RESPONSIBILITIES:** Senior Director of Generation – Establish policy for all Generating Plants to develop plans to operate during winter weather events safely and reliably.

Plant Directors – Develop plant specific winter weather plans, ensure implementation, assign plan execution responsibilities, develop, and ensure staff training, oversee corrective action plans, and plant plan updates.

- 3.0 **PERIODIC REVIEW:** This policy is to be reviewed annually.

- 4.0 **SAFETY:** Working safely is the responsibility of everyone. Winter weather conditions can present exposure to potential safety hazards. Ensure daily and pre-job safety briefings include appropriate winter weather-related topics. Follow OSHA [Cold Stress Guide | Occupational Safety and Health Administration \(osha.gov\)](https://www.osha-slc.gov/cold-stress-guide/)

EOP-12-2 R1, R1.1, R1.2.1, R1.2.2

- 5.0 **FIVE-YEAR REQUIREMENTS:** At least once every 5 calendar years, each Generator Owner shall calculate, for each of its applicable units:

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R1.1

A. Extreme Cold Weather Temperature (ECWT)

The ECWT shall be calculated for each plant using the prescribed NERC method with NOAA data. The ECWT methodology is described in Attachment 2. If the new ECWT is lower than the previous, the plant(s) shall review their plans and update them within 6 months of the recalculation.

R1.2

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

R1.2.1

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

- a. Capability and availability;
- b. Fuel supply and inventory concerns;
- c. Startup issues;
- d. Fuel switching capabilities; and
- e. Environmental constraints.

R1.2.2

2. Generating unit(s) minimum Each plant shall be able to produce documentation for one of the following:

- a. Design temperature, and if available, concurrent wind speed and precipitation; or
- b. Historical operating temperature at least one hour in duration, and if available, concurrent wind speed and precipitation; or
- c. Current cold weather performance temperature determined by an engineering analysis, which included the concurrent wind speed and precipitation.

R3

6.0 **FREEZE PROTECTION:** Each plant will have evidence that it has freeze protection measures to withstand the ECWT for that unit. Evidence is to include: Annual inspection and maintenance of generating unit(s) freeze protection measures.

These freeze protection measures are to include protection of Generator Cold Weather Critical Components (GCWCC's) or

6.1 Develop a Corrective Action Plan to add new or modify existing freeze protection measures to provide the capability of the unit to operate at the unit's calculated Extreme Cold Weather Temperature

R4

7.0 **COLD WEATHER PLANS:** Each Generator shall implement and maintain a cold weather preparedness plan. The plan shall include, at a minimum;

- A. Current calculated ECWT
- B. Generating unit cold weather data (requirement 1.2)
- C. Documentation identifying (GCWCC's)

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- D. Documentation of measures implemented on GCWCC which include measures used to reduce the cooling effects of wind and freezing precipitation.
- E. Annual inspection and maintenance of generator freeze protection.

R5

8.0 TRAINING:

- A. Plant personnel requiring training shall be identified in each plant(s) procedure.
- B. Training shall be conducted annually to all personnel that are required to have such training. Records of this training and attendance logs shall be kept for documentation.
- C. Coordinate annual training, prior to October 31st, in winter specific and plant specific awareness and maintenance training. This may include response to freeze protection panel alarms, troubleshooting and repair of freeze protection circuitry, identification of plant areas most affected by winter conditions, review of special inspections or rounds implemented during severe weather, fuel switching procedure, knowledge of the ambient temperatures for which the freeze protection was designed, and lessons learned from previous experiences or the NERC Lessons Learned program. New or transitioned employees hired after the annual training is conducted will be trained on the plant's cold weather plan and procedures during orientation training.
- D. Ensure appropriate NERC Generation Availability Data Systems (GADS) coding for unit derates or trips that were the result of severe winter weather events to promote lessons learned, knowledge retention, and consistence. Examples may include NERC GADS code 9036 "Storms (ice, snow, etc.)" or code 9040 "Other Catastrophe".

R6, R6.1, R6.2, R6.3

9.0 CORRECTIVE ACTION PLAN (CAP):

- A. Corrective Action Plans shall be developed when a generator experiences a Generator Cold Weather Reliability Event. Plant shall use Attachment 1 to give the details of the event. The plan shall be developed within 150 days or by July 1, whichever is earlier, and shall contain at a minimum;
 - 1. Summary of identified causes for the event and any relevant data.
 - 2. A review of applicability of any similar equipment.
 - 3. Identification of operating limitations or impacts to the cold weather preparedness plan that would apply until execution of the corrective actions.

R7, R7.1, R7.1.1, R7.1.2, R7.1.3

- B. Plants shall also include a timetable for implementing the selected corrective action(s) that shall:
 - 1. List the actions which address existing equipment or freeze protection measures to be completed within 24 calendar months of completing the CAP
 - 2. List the actions that require new equipment to be completed with 48 months of completing the CAP.
 - 3. List the updates to the plan under R4 to identify updates or additions to the GCWCC list and freeze protection measures.

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R7.2

C. Plants shall implement the corrective action plan in accordance with paragraph B above.

R7.3

D. Plants shall update the corrective action plan action(s), and timetable(s) with written justification if corrective actions change or timetables exceed the timelines specified in paragraph B above

R7.4

E. Plants will document in a declaration with justification andy generator cold weather constraint that precules the generator from implementing slection actions contained in the corrective action plan.

R8.0, 8.1, 8.2

10.0 **GENERATOR COLD WEATHER CONSTRAINT:** In the event that a unit cannot be run at the ECWT, a Cold Weather Constraint declaration must be made. This constraint must be reviewed every 5 years, or as needed when a change in status occurs. The operating limitations associated with capability and availability must also be updated.

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Attachment 1

Corrective Action Plan (CAP) Template

(Use this form to assist in developing corrective actions needed in the event of a cold weather-related event which has caused a generating unit to trip offline, derate, or fail to start, OR for required new freeze protection measures or modification of existing freeze protection measures.)

- 1) Description of Event (including weather conditions):
- 2) Identify Cause of Event (what equipment was affected):
- 3) Identify what actions are needed to prevent occurrence of this event in future:
- 4) What is the time required to implement the corrective actions needed?
- 5) Are there any temporary operating limitations that apply to the generating unit until the corrective actions are completed?
- 6) Are revisions to the generating unit's cold weather plan, or further corrective actions to be taken required?

If the answer to 6. above is NO; Document any technical, commercial, or operational constraints to support the declaration. In the event that a unit can not be run at the ECWT, a Cold Weather Constraint declaration must be made. This constraint must be reviewed every 5 years, or as needed when a change in status occurs. The operating limitations associated with capability and availability must also be updated.

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Attachment 2

ECWT Methodology

What is ECWT?

The extreme cold weather temperature (ECWT) is defined as:

“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.”¹

Calculating ECWT

Hourly temperature records are sourced from the Global Historical Climatology Network-hourly (GHCNh), Version 1², maintained by the National Centers for Environmental Information (NCEI) under the National Oceanic and Atmospheric Administration (NOAA). Data is collected from the nearest weather station to the generation site that reports FM-15 (METAR) data. If sub-hourly records are available, only one record per hour is used.

If a temperature record is missing for a specific hour, dating back to midnight on January 1, 2000, data from the next closest weather station with an available record for that hour is used. This process is repeated until all historical gaps are filled.

To ensure accuracy, only weather stations within 200 miles and ± 500 feet of elevation from the generation site are considered.

Once a complete history of temperature records is established, the 0.2 percentile of recorded temperatures is calculated to determine the Extreme Cold Weather Temperature (ECWT) of the site.

¹ https://www.nerc.com/pa/Stand/Project202107ExtremeColdWeatherDL/2021-07%20FB_Phase%202_EOP-012-2_clean_Feb2024.pdf

² <https://www.ncei.noaa.gov/access/search/data-search/global-historical-climatology-network-hourly>