

Western Interconnection Extreme Weather Readiness Assessment

April 2026

In response to concerns about the reliability risks associated with cold weather, WECC has created an Assurance Program for entities across the Western Interconnection. Managed by WECC staff, the program is designed to help WECC, and its stakeholders better understand these risks, while ensuring awareness of best practices and the resources available to mitigate the risks through industry organizations such as WICF, NAGF, NATF, WECC, NERC, and FERC.

The Assurance Program may also recommend improvements of policy, process, and procedures via documentation provided individually or globally for WECC's stakeholders. The program will include reviews of events (e.g., Winter Storm Elliott, August 2020 Heat Wave Event) and approaches that entities may be using in response to recommendations from the reports of said events. FERC, NERC, and industry invest significant resources to publish an event report, and taking advantage of the outcomes can be beneficial even for those not directly involved in an event. WECC also will provide feedback to program participants to help benchmark practices and identify improvements from an interconnection-wide perspective.

To identify candidates (e.g., registered entities and entities pending registration) for the Assurance Program, WECC will use resources such as the Generating Availability Data System (GADS), responses to NERC Alerts, WECC's risk management process, inherent risks (e.g., generation ownership by type and location), and report recommendations.

The Assurance Program continues to evolve as additional interactions take place. The engagements so far have been productive and form the basis of this assessment. The observations below are for Generator Owners and Generator Operators in the Western Interconnection to consider and compare to their existing practices.

While the program initially focused on extreme cold weather readiness for generation facilities, its scope has expanded to encompass preparedness for all forms of extreme weather and consideration of other risks. These observations may help enhance overall readiness for the wide range of conditions in which a generating unit plant may be required to operate.

WECC would like to thank the registered entity staff members that have provided collaborative interactions for the program. We appreciate you all taking time out of your schedules to address the questions and work with the team throughout the process.

Western Interconnection Areas of Strength and Stand-out Practices

1. Development and implementation of mature cold weather readiness programs prior to any mandatory requirements related to cold weather. These approaches were based on reliable plant operations.
2. Exhibiting an attitude of continuous improvement by using various opportunities to strengthen their generator readiness programs. A few examples include:
 - a. Incorporating insights from industry disturbance reports, lessons learned, and engagement in industry forums and groups (SGAS, WICF, NAGF, etc.).
 - b. Holding an end-of-season review focused on identifying additional actions that will strengthen the entity's extreme weather readiness program.
 - c. Using information from all the plants in the organization's generation fleet to learn from challenges other plants have experienced in pre- and post-seasonal meetings and training.
 - d. Emphasizing enhanced communication and notification efforts prior to, during and after extreme weather events.
 - e. Creating extreme-weather unit specific checklists for use prior to, during, and after extreme weather events.
3. Maintaining alarms in the control room on freeze protection measures on critical components (e.g., heat trace circuits, room thermostats, ambient air temperature, and humidity sensors) with associated operator displays for quickly identifying issues.
4. Creating automatically generated extreme weather work orders before and after extreme weather seasons for extreme weather preparedness activities and specific actions for critical components. Weather-related work orders are flagged for critical component maintenance and inspections to reflect the cold weather preparedness plan. The work orders included the associated expected completion dates. Visibility escalation to upper management when these work orders were approaching the due date or became past due was evident. Fleet-wide work orders supplanted by individual site plant work orders with completion prior to the extreme weather season are being used.
5. Executing practices to perform additional readiness checks when extreme weather is forecast.
6. Stocking materials to prepare for extreme weather (e.g., insulation wraps, portable HVACs, spare heat trace, etc.) on-site to avoid relying on a third party.
7. Fleetwide sharing of material inventory was noted for a large utility to facilitate better preparedness, quicker returns to service (if needed), tracking of component failures, and general cost efficiencies.
8. Creating and implementing a program to rotate personnel between plants to support operational flexibility, help ensure consistency in approaches to extreme weather preparedness, and encourage sharing of field experience (versus reading about a lessons learned opportunity).



9. Implementing, due to physical location, an increase in on-site staff when fog, a form of weather considered to be extreme, is forecast. Although not a predominant weather pattern, this illustrated awareness of other forms of extreme weather that required appropriate preparedness.
10. Implementing, based on a past event where a chemical “froze” within a small feeder pipe due to feed-rate being low, adjustments in operations to include a slightly more diluted chemical mixture to increase flow within the Generator Cold Weather Critical Component. This approach can mitigate the risk effectively.
11. Exhibiting a highly apparent positive “tone at the top” posture, which was reflected in the overall approach to extreme weather preparedness. Emphasis was placed on being transparent with issues and sharing of experiences across the fleet with continuous improvement being the motivating factor.
12. Considering extreme cold weather preparedness as not geographically limited. An entity in an area with extremely limited exposure to extreme cold weather provided some of the stand-out practices included in this document.
13. Initiating an AI-based advanced pattern recognition approach for monitoring and tracking critical components within a Facility. The intent is to use the information across its fleet to enhance support of reliable operations.
14. Conducting periodic drills for summer and winter extreme conditions that has become an expectation that goes beyond any Reliability Standard expectation.
15. Incorporating temperature-driven “tiered” preparation activities based on the projected conditions with an increase in operator rounds during extreme temperatures (both lower and higher) noted.
16. Designating responsibility for seasonal site preparation coordination to an accountable individual at each site and requiring the site coordinators to communicate often (before, during, and after extreme weather).
17. Developing a “site certification” program including results being provided to executive management before the winter period.
18. Requiring manual observation of temperature readings near critical components to help ensure the level of situational awareness expected for those components (versus an automated temperature reading system).
19. Incorporating resiliency into the application of heat trace on critical components. If the primary heat trace fails, the secondary heat trace is automatically put in service.

Western Interconnection General Opportunities for Improvement

1. Some entities have developed winter preparedness plans based mainly on meeting the minimum requirements in Reliability Standards. Summer preparedness plans appear to be lacking in terms of defined processes and procedures.



2. Several entities were not benefiting from opportunities for improvement available from outside their plant or organization (e.g., adjacent neighbors, Regional Entities, industry groups) There appear to be entities with extensive experience that have not shared that experience with industry.
3. Several readiness plans lacked detail that would be useful for someone unfamiliar with the plan.
4. Lack of a clear, consistent, documented approach for identifying Generator Cold Weather Critical Components at the plant. Some entities had a reactive approach to identifying components for this list.
5. Some entities in regions where an extreme weather condition (i.e., both cold and hot or the lack of either) is considered “normal” or “never occurs” are taking minimalist approaches and are leaning toward a reactive approach versus a proactive approach to mitigating the risks.
6. Tracking and trending of critical components (both extreme heat and extreme cold critical components) could be emphasized to facilitate preparedness and identify weaknesses in freeze protection measure applicability.
7. Consider increasing use of thermal imaging equipment during operator rounds to recognize potential issues due to extreme weather (both cold and hot).
8. Consider bringing heat-trace-related alarming into control room for more real-time awareness.
9. Ensure involvement in user groups for new technologies to incorporate lessons learned as new technologies are being integrated into the grid.
10. Ensure that extreme weather training is unit specific and is provided to all personnel responsible for implementing the extreme weather preparedness plans. Ensure that the roles, and the personnel in those roles, are identified and all training is tracked to ensure timely completion. Ensure knowledge/skill assessment inclusion in the training to gauge the effectiveness of the training.
11. Entities responsible for blackstart resources should review the recommendations from the [Blackstart Resource Availability and Readiness in the Eastern and Western Interconnections](#) report published in November 2025 and implement the recommendations, as applicable.

Overall Assessment

Although a thorough assessment of extreme weather preparedness throughout the Western Interconnection has not been fully conducted, numerous interactions between WECC staff and representatives of registered entities have demonstrated dedicated efforts to remain operationally reliable during extreme weather, with an emphasis on extreme cold weather. The emphasis appears to be related to the regulatory requirements currently in effect for extreme cold weather based largely on past experiences by industry. Sharing the adopted practices, which this document reflects at a high level, is a foundational principle for the program. It is understood that some registered entities will have a stronger approach to mitigating the risk of operating in extreme temperatures. That robust approach is needed because of the location of the plant (e.g., further north or in desert-like conditions). However,

other entities should note the practices and thoroughly assess whether using those practices would be beneficial for their site. If it is unusually cold in southern subregions of the Western Interconnection due to a widespread extreme cold weather event that also affects the interconnection's northern subregions, there may be a more critical need for registered entities in the southern subregions to maintain operational reliability, as the ability to transfer electricity from the northern subregions would be limited or impossible. A similar example of extreme *heat* in other parts of the Western Interconnection could be made. The diversity in weather locales and the associated shifts in what "extreme" weather may be considered should be noted and addressed by entities, especially those that have, to date, limited exposure to extremes. Being prepared makes a significant difference.

This Assurance Program is predicated on gathering information in a variety of ways, including one-on-one site visits. As the program matures and increases its capability to gather data through other means, additional information will be added to this document as well as other extreme weather assessments.