

Announcement

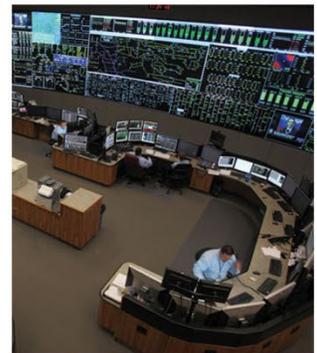
Extreme Weather, Inverter Issues, and Cyber Threats Pose Unprecedented Challenges to the Grid

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ATLANTA – The grid withstood an unprecedented combination of challenges in 2021 — extreme and sustained weather events, increasingly sophisticated and severe cyber and physical threats and the urgent need to reliably integrate the rapidly growing fleet of inverter-based resources — that tested grid reliability, resilience and security. In spite of these conditions, NERC's [2022 State of Reliability](#), which looks at past performance, found that operators maintained grid reliability with one notable exception — the February 2021 Texas and South-Central United States cold weather event that led to the largest controlled load shed event in North American history.

The annual State of Reliability highlights the health of the interconnected system and the effectiveness of reliability risk mitigation activities. Based on data and information collected on grid performance in 2021, NERC identified six key findings and is taking actions to address them. The impact of extreme weather is a consistent theme underlying four of the key findings:

- The February 2021 cold weather event demonstrated that a significant portion of the generation fleet in the impacted areas was unable to supply power during extreme cold weather.
- Electricity and natural gas interdependencies are no longer emerging risks but ones that require immediate attention, including the implementation of mitigation strategies.
- Severe weather challenged the grid, putting resilience into focus.
- Geopolitical events, new vulnerabilities, new and changing technologies and increasingly bold cyber criminals and hackers presented serious challenges to the reliability of the grid.
- Large geographic areas have become dependent upon renewable resources to meet peak loads and multiple instances of the loss of solar in Texas and California in 2021 confirm that unaddressed inverter issues increased reliability risk.
- Additional data types are needed to enable more complete analysis of Adequate Level of Reliability (ALR) performance objectives.



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“When we look at events over the last several years, it is clear that the bulk power system is impacted by extreme weather more than ever before,” said John Moura, director of Reliability Assessment and Performance Analysis. “As we transition our system so rapidly, it is vitally important that we are building and operating a system that can be resilient to the extreme weather we might see in the future.”

Leading indicators show that the bulk power system continues to perform in a highly reliable and resilient manner with year-over-year improvement, demonstrating the success of industry actions.

“There are a number of favorable performance trends — including relay misoperation rates, transmission outage severity and frequency of qualified events — that conclusively show industry improvements and commitment to mitigate reliability threats,” said Donna Pratt, manager of Performance Analysis and State of Reliability project lead. “However, the rapidly changing risk profile requires new approaches to navigate reliability effectively. Significant events in 2021 highlight the need for aggressive action.”

To address these, NERC is taking the following actions:

- The ERO Enterprise is quickly implementing the recommendations in [the FERC, NERC and Regional Entity Staff Report: The February 2021 Cold Weather Outages in Texas and the South-Central United States](#).
- The ERO Enterprise is actively encouraging registered entities to conduct studies to model plausible and extreme natural gas disruptions set forth in NERC’s [Reliability Guideline: Fuel Assurance and Fuel-related Reliability Risks](#).
- The ERO Enterprise is expanding and further refining resilience and restoration analysis by examining generation and load loss as well as improving linkage between grid equipment outages and weather data.
- Industry is developing security-informed institutional practices that leverage security frameworks and activities to protect and secure the operational and organizational environment.
- The ERO Enterprise and industry are implementing the recommendations set forth in the [Odessa Disturbance Report](#) and the [2021 CAISO Solar PV Disturbance Report](#) that include incorporating electromagnetic transient modeling into reliability standards and developing a comprehensive ride-through requirements focused specifically on generator protections and controls.
- NERC is identifying appropriate approaches for measuring ALR performance objectives where gaps have been identified.

The [2022 State of Reliability](#) provides objective and concise information to policymakers, industry leaders and regulators on issues that affect the reliability and resilience of the North American bulk power system while providing strong technical support for those interested in the underlying data and detailed analytics. Specifically, the report identifies system performance trends and emerging reliability risks; reports on the relative health of the interconnected system; and measures the success of mitigation activities deployed. The report’s key findings are also highlighted in the [2022 State of Reliability infographic](#).

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Electricity is a key component of the fabric of modern society and NERC, as the Electric Reliability Organization, serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of NERC and the six Regional Entities, is a highly reliable and secure North American bulk power system. Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.