

Announcement

Extreme Weather, Cyber and Physical Security Continue to Create Reliability Challenges

June 22, 2023

ATLANTA – NERC’s 2023 *State of Reliability* (SOR) finds that overall, the North American bulk power system (BPS) remains highly reliable and resilient. However, extreme weather events continue to pose the greatest risk to its reliability and stability. Transmission system reliability has improved significantly for the fifth consecutive year, and the rate of protection system misoperations also continues to improve. Conventional generation, challenged by more frequent extreme weather, experienced its highest level of unavailability overall since NERC began gathering generator availability data in 2013. In addition, cyber security compromises and increased physical attacks on critical infrastructure in the latter part of 2022 reinforce the need for further development and adaptation of reliability standards and guidelines.

“Today’s BPS transmission system is continuing to show improvements in reliability and resilience, despite more common and extreme weather trends. However, higher overall outage rates for coal and gas generation, as well as some utility-scale solar generation not operating as necessary for reliability, indicate that there is still significant work to be accomplished to accommodate the rapidly changing weather and generation resource mix in conjunction with electrification of the economy in a reliable manner,” said Donna Pratt, NERC’s performance analysis manager.

The SOR provides analysis of past BPS performance, through a detailed comprehensive, analytical review of BPS reliability for the 2022 calendar year. Additional findings arising this year indicate that the dynamic performance of inverter-based resources (IBR) must be improved if the BPS is to benefit from the rapid expansion of this resource.

The 2023 SOR includes several actions taken by NERC related to the findings and recommendations:

- NERC issued a Level 3 essential action alert in May 2023: [Essential Actions](#)

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- [to Industry - Cold Weather Preparations for Extreme Weather Events](#). This was the first time that NERC has issued a Level 3 alert, which is the highest severity level in its classification structure.
- NERC revised three standards as a result of the 2019 cold weather event. Those standards became effective April 1, 2022; additional standards revisions resulting from the 2021 cold weather event are ongoing.
- NERC expanded its reliability assessment data requests to further measure preparedness during cold weather events.
- NERC issued a [Level 2 alert](#) on issues related to IBRs on March 14, 2023. The alert was issued after NERC analyzed multiple large-scale disturbances involving widespread loss of IBRs, which resulted in abnormal performance across several Bulk Electric System solar photovoltaic generating resources.
- NERC recommends immediate industry action to implement published guidelines and ensure the reliable operation of the BPS with increasing penetrations of IBRs.
- NERC recommends that IBR modeling requirements need significant improvement to ensure that high-quality, accurate models are used during reliability studies so performance issues can be identified before they occur during real-time operations.
- NERC's Electricity Information Sharing and Analysis Center (E-ISAC) gathered and distributed industry threat intelligence providing in-depth analysis of information products that addressed specific areas of concern to the industry. The E-ISAC produced 242 analytical products in 2022.

The [2023 SOR Overview](#) and [2023 SOR Technical Assessment](#) provides objective and concise information to policymakers, industry leaders and regulators on issues that affect the reliability and resilience of the North American BPS 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 [2023 SOR Infographic](#) and [Video](#).

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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.