

Announcement

Report Highlights Criticality of Ensuring Reliable Operation of Inverter-Based Resources; Provides Recommendations

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ATLANTA – The ongoing widespread reduction of solar photovoltaic (PV) resources continues to be a notable reliability risk to the bulk power system (BPS), particularly when combined with the loss of other generating resources on the BPS and in aggregate on the distribution system, a joint report from NERC and WECC found. Between June and August 2021, four disturbances involving widespread reduction of power from BPS-connected solar PV resources occurred in Southern California, specifically in areas of high penetrations of solar PV and wind resources.

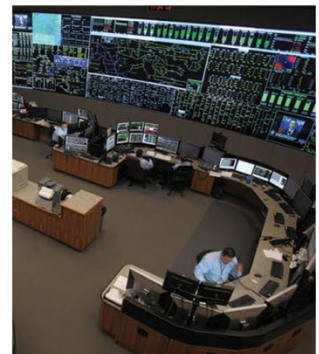
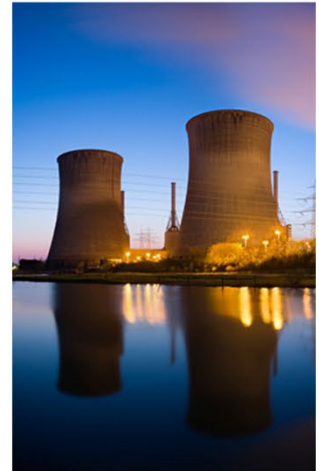
The [Multiple Solar PV Disturbances in CAISO Disturbances between June and August 2021: Joint NERC and WECC Staff Report](#) analyzes the initiating events and performance of the BPS-connected solar PV fleet during the events. The report also documents key findings and provides recommendations to industry for improved performance validation of the solar PV fleet and improved modeling and study practices to identify these issues before real-time operations.

These four disturbances further emphasize the need to ensure BPS-connected solar PV resources (and all BPS-connected inverter-based resources) are operating reliably to support the BPS. The persistent and systemic nature of these events indicate an ongoing and elevated level of risk to the BPS.

“This report shows the continued reliability impacts of inverter-based resources connected to the BPS,” said Howard Gugel, NERC’s vice president of Engineering and Standards. “NERC continues to stress the importance of understanding how these resources react to grid disturbances, ensuring they provide essential reliability services and developing mitigation strategies to reduce negative reliability impacts.”

The report provides three high-level recommendations for industry action:

- **Reinforcing the Recommendations from the *Odessa Disturbance Report*:** The NERC [Odessa Disturbance Report](#) outlined a number of strong recommendations to address known reliability gaps or issues for reliable operation of BPS-connected inverter-based resources (mainly solar PV resources). NERC reiterates the need for industry action on those recommendations.



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- **Reinforcing that Significant Updates and Improvements are Needed to the FERC Generator Interconnection Agreements:** All the performance issues identified in the NERC disturbance reports stem from a lack of performance requirements. These four events show that most of the affected facilities had minimal interconnection requirements applied to them and, therefore, introduced adverse impacts to the Bulk Electric System in aggregate.
- **Reinforcing that Improvements to NERC Reliability Standards are Needed to Address Systemic Issues with Inverter-Based Resources:** This disturbance report strongly reiterates the recommendations in the *Odessa Disturbance Report* regarding the need to modernize and update the NERC Reliability Standards.

“There is no doubt that the penetration of inverter-based resources will increase, not just in California, but throughout the Western Interconnection,” said Branden Sudduth, WECC’s vice president of Reliability Planning and Performance Analysis. “We need to get to the point where we have confidence in the models and actual performance of these resources. We have a lot of work to do to get to this point, but we have efforts in place to ensure that the legacy equipment is performing as optimally as possible, while ensuring the performance of new plants exhibits the ride-through capabilities we know these resources are capable of. We believe the recommended alterations to certain standards will clearly set the expectation of how these resources are to be modeled and perform. We appreciate the opportunity to work with NERC and the California ISO on these important reliability issues.”

As part of its ongoing responsibilities as the Electric Reliability Organization (ERO) of North America, NERC is tasked with assuring the reliability of the North American BPS and is continually assessing the impacts of the changing resource mix. The North American BPS and electric grids around the world are undergoing rapid transformations toward increasing amounts of renewable generation such as wind, solar PV, battery energy storage and hybrid power plants. While these inverter-based resources present new opportunities in terms of grid control, they also introduce potential risks to the system, as documented by NERC in multiple disturbance [reports](#). NERC and WECC strongly recommend that industry take timely action to implement all of the recommendations set forth in this disturbance report, past disturbance reports, and related NERC [reliability guidelines](#). The [NERC Inverter-Based Resource Performance Subcommittee](#) will continue driving implementation of the recommendations set forth in the NERC disturbance reports.

The ERO Enterprise, made up of NERC and the six Regional Entities, will continue to analyze disturbances that involve widespread reductions of solar PV resources to identify any systemic reliability issues, support affected facilities in developing mitigating measures and share key findings and recommendations with industry for increased awareness and action.

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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.