



New York Reliability Council
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NYSRC Comments on FERC Proposed Rulemaking: 18 CFR Part 40 [Docket No. RM22-12-000] Reliability Standards to Address Inverter-Based Resources (Issued November 17, 2022)

New York State Reliability Council (NYSRC)

The NYSRC (<https://www.nysrc.org/>) was approved by FERC in 1998 as part of the comprehensive restructuring of the wholesale electricity market in New York State. Under the restructuring, the New York Power Pool (“NYPP”) was replaced by the New York System Independent System Operator (“NYISO”) as the entity with the primary responsibility for the reliable operation of the state’s bulk power system. The NYISO also assumed responsibility for administration of the newly established competitive wholesale electricity markets. The NYSRC was established to promote and preserve the reliability of the New York State Power System by developing, maintaining and, from time to time, updating the reliability rules (“Reliability Rules”) that govern the NYISO’s operation of the state’s bulk power system.

The NYSRC develops Reliability Rules that are more specific or more stringent than, and are inclusive of the standards, criteria, and regulations of North American Reliability Corporation (“NERC”), Northeast Power Coordinating Council (“NPCC”), FERC and the Nuclear Regulatory Commission. The NYISO/NYSRC Agreement provides that the NYISO and all entities engaged in transactions on the New York State power system must comply with the Reliability Rules adopted by the NYSRC. The NYSRC Reliability Rules have been adopted by New York State’s Public Service Commission under its Public Service Law authority prescribing reliability rules necessary to ensure safe and adequate service.

NYSRC Comments on the Proposed NOPR “Reliability Standards to Address Inverter-Based Resources” RM22-12-000

NYSRC supports the need for the Notice of Proposed Rulemaking with its objective of developing new or modified Reliability Standards that address the following reliability gaps related to inverter-based resources (IBR): data sharing; model validation; planning and operational studies; and performance requirements. As noted by the Commission, there is an

urgent need for standards in this area as evidenced by the unreliable operation¹ of existing IBR projects in California, Texas and elsewhere, as cited in this NOPR RM22-12-000 and detailed in NERC Disturbance reports². In addition, there is a huge influx of IBR projects proposed for connection in the New York electric grid and throughout the NERC footprint to meet renewable resource related public policies. These IBR resources presently do not have comprehensive interconnection, planning or operating standards. For example, the New York Independent System Operator (NYISO) currently has more than 90 GW of potential solar, wind and storage IBR projects in its interconnection queue without an IBR specific interconnection standard. It is important to note that peak load in New York is presently in the vicinity of 30 GW although that is expected to increase as decarbonization goals are aggressively pursued.

It is recognized that FERC has recently approved revisions to Reliability Standards FAC-001-3 (Facility Interconnection Requirements) and FAC-002-3 (Facility Interconnection Studies), as well as NERC IBR related Guidelines, including "*Reliability Guideline: Improvements to Interconnection Requirements for BPS Connected Inverter-Based Resources (Sept. 2019)*". The current NOPR addresses requirements for new and existing "*registered IBR, unregistered IBR, and IBR-DER projects*", that is, for all new and existing IBRs.

NYSRC supports the NOPR's general requirements for: data sharing; model validation; planning and operational studies; and performance requirements for existing IBR facilities, as well as for new IBR facility interconnections. The NOPR notes that "*there are voluntary industry standards and manufacturer certification efforts related to IBRs in place or underway, such as the Institute of Electrical and Electronics Engineers (IEEE) standard 2800-2022³*" but "*these efforts remain at relatively early stages, do not apply to all relevant IBRs, and require adoption by state or other regulatory authorities. The proposed directives to NERC to develop new or modify existing Reliability Standards are intended to complement existing voluntary efforts underway and are not intended to supersede or interfere with these efforts*".

Following extensive review, the NYSRC identified the need for, and is in the process of implementing actions that provide a complementary path to the NOPR's general requirements. These actions are essential to preserve New York Control Area (NYCA) reliability in anticipation of the transition from synchronous generation to renewable IBR connected generation

¹ The term "reliable operation" is defined in section 215(a)(4) of the FPA as "operating elements of the bulk-power system within equipment and electric system thermal voltage, and stability limits so that instability, uncontrolled separation, or cascading failures of such system will not occur as a results of a sudden disturbance, including cybersecurity incident, or unanticipated failure of system elements".

² For the most recent and largest event to date, see the NERC Report "2022 Odessa Disturbance", [https://www.nerc.com/comm/RSTC_Reliability_Guidelines/NERC_2022_Odessa_Disturbance_Report%20\(1\).pdf](https://www.nerc.com/comm/RSTC_Reliability_Guidelines/NERC_2022_Odessa_Disturbance_Report%20(1).pdf), that includes recommendations for needed actions to prevent the current risk of IBRs to reliability.

³ IEEE Standard for Interconnection and Interoperability of Inverter-Based Resources (IBR) Interconnecting with Associated Transmission Electric Power Systems (IEEE 2800-2022)

facilities. To this end, the NYSRC approved an Inverter Based Resources white paper⁴ (attachment #1) on July 8, 2022 which recommended that the following actions be taken:

- Phase 1 - Implement the adoption of IEEE 2800-2022 requirements for all new IBR interconnections to the NYCA BPS
- Phase 2 - Implement IBR modeling in all NYISO system performance studies
 - Resource adequacy requirements
 - Transmission planning requirements
 - System performance evaluations
- Phase 3 - Implement IBR-DER modeling in all NYISO system performance studies

NYSRC is the Authority Governing Interconnection Requirements (AGIR)⁵ in New York State and, as recommended in Phase 1 of the white paper, NYSRC is in the process of implementing IEEE 2800-2022 for application to IBR interconnections in the New York Control Area. It is expected that a new NYSRC IBR interconnection reliability rule will be implemented in the first quarter of 2023. It is recognized that the rule may be modified as experience is gained, and as NERC IBR reliability standards, guidelines and mandatory requirements are ultimately approved.

In addition, to support for the NOPR's general requirements, the NYSRC recommends that FERC allow for and consider making clear in any resulting rules or requirements that:

- IEEE Standard 2800-2022 be utilized as the basis for any resulting rule or requirement since it was independently developed by a standards body with the active participation of IBR equipment manufacturers among other industry participants.
- There be established validation processes for models of components of an IBR project (e.g., IBR controls systems) and the IBR plant as a whole. Components include the individual solar, wind or storage devices; the plant protection systems, plant controllers, ancillary equipment, and interconnection equipment (transformers & transmission lines).
- Provide for mandatory delivery by equipment manufacturers and project developers of detailed, equipment specific, verifiable manufacturer's models and data necessary for planning and operational studies.

IBR equipment technology is capable of operating in the millisecond time range while planning and operating models simulate operation in the fundamental frequency range. These models are substantially different from past generating resource models which

⁴ [https://www.nysrc.org/PDF/Documents/Inverter Based Resources White Paper - EC Approved 7-8-2022.pdf](https://www.nysrc.org/PDF/Documents/Inverter%20Based%20Resources%20White%20Paper%20-%20EC%20Approved%207-8-2022.pdf)

⁵ IEEE 2800-2022 defines, but does not implement or designate the AGIR for a given area. This decision is left to local authorities. NYSRC is in the process of implementing this step, but it is necessary for all surrounding regional power systems to take similar steps for the interconnected power system for the standard to be effective in preserving reliability.

were developed over many decades. IBR's on the other hand have been and are being interconnected in the short-term in large amounts. Therefore, it is critically important that IBR planning and operating models and data be validated to have the same performance characteristics as the detailed equipment IBR models and thus permit reliable simulations of IBR equipment.

- Project owners and operators actively participate in performance analyses for use in: future interconnection studies; follow-on studies reflecting the as-built equipment and system conditions; studies evaluating subsequent changes to the installed equipment, protection, or control systems; operational performance monitoring; and disturbance related data capture and evaluation.
- FERC clarify the statement in the NOPR *"We are aware that certain registered IBRs currently in operation may not be able to meet the requirements proposed above. Therefore, we propose to direct NERC to require transmission planners and operators to implement mitigation activities that may be needed to address any reliability impact to the Bulk-Power System posed by these existing facilities."*

The NYSRC is concerned that this may be an infeasible, open-ended request for transmission owners and operators because it would be asking them to plan to mitigate for an event that may consist of an unknown amount of IBRs disconnecting from the system at any time in the future, in an unanticipated manner. In practice, this would mean that planners and operators would have to discount all existing non-compliant IBR resources for transmission and resource planning, and operating studies, which would result in a corresponding increase in compliant resources. Given the events that are already happening in certain areas of the country that have a significant amount of renewables and storage facilities interconnected to the grid, it is difficult to imagine practical operating or mitigation measures other than discounting non-compliant IBR resources, as described above.

Therefore, it is recommended that FERC consider clarifying in its order that existing IBRs be required to comply with the new standard. Further, that this requirement be issued on an emergency basis. A reasonable amount of time should be provided for existing facilities to demonstrate compliance or implement a mitigation measure.

The NYSRC respectfully recommends that, in addressing the issues raised in its NOPR on Reliability Standards to address Inverter-Based Resources, the Commission give full consideration to the recommendations set forth herein and act expeditiously in this matter due to the accelerating penetration of IBR facilities in many areas of North America.