

WHITE PAPER SCOPE

**PROPOSED NYSRC RELIABILITY RULES:
TRANSITION TO INTERMITTENT RESOURCES & ENERGY STORAGE SYSTEMS PER
CLCPA RENEWABLE RESOURCE CAPACITY GOALS**

INTRODUCTION

New York State’s Climate Leadership and Community Protection Act (CLCPA) mandates that New York’s power supply is 70% emission free energy by 2030, 100% emission free energy by 2040 and statewide net zero emissions from all sources by 2050. CLCPA’s Climate Action Committee’s Draft Scoping Plan for the power sector, Scenario C indicates that ~~in the power sector~~ new storage and variable resource capacity will be required starting in 2025 at ~156,000 MW and rising to ~116,000 MW in 2050 in order to meet these goals. It is noted that the New York Independent System Operator (NYISO) interconnection queue currently has had ~75,000~~39,444~~ MW of potential wind, solar and storage resources listed as of March 31, 2022. This capacity will be interconnected to the New York Control Area (NYCA) Bulk Power System (BPS) utilizing~~by~~ Inverter Based Resources (IBR) which have radically different performance characteristics from conventional synchronous generators.

It is clear that there will be an unprecedented change in the magnitude and performance~~capability~~ nature of NYCA’s of new generating resources in the NYCA in the ~~capacity in the~~ near future. In addition, ride through performance of existing IBR after routine system disturbances is lacking as demonstrated in several recent disturbance analysis~~analyses in~~ concerning mis-operation of intermittent resources in California^{1,2} and Texas³. These events make the case underline the for the need tofor improved reliability standards and interconnection requirements in this technical~~in this~~ area.

New York State Reliability Council’s (NYSRC)~~s~~ 2022 Goal A-2 is intended to address the need for mandatory standards in New York for the interconnection of IBR resources and for the evaluation of system performance with IBR resources. Goal A-2 identifies actions to preserve adequate NYCA reliability for the extraordinary high levels of renewable resource capacity ~~as~~ mandated by the CLCPA. This goal~~it considers~~ calls for developing new rules and modifying existing rules, including resource adequacy and transmission planning design requirements, recognizing the transition to a greater reliance on utility connected IBR resources and energy storage systems, and Behind The Meter (BTM) Distributed Energy Resources (-DER), and utility connected intermittent renewable resources and energy storage systems. The performance of the NYCA

¹ [Multiple Solar PV Disturbances in CAISO - April 2022](#)
² [San Fernando Disturbance - November 2020](#)
³ [Odessa \(TX\) Disturbance - September 2021](#)

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power system depends on appropriate getting the interconnection standards is being in place right, ~~now~~ before the replacement fleet of IBR resources is designed and installed. This document fulfills progress NYSRC Goal target A-2a which is to present scope for a white paper to NYSRC's Executive Committee (EC) by ~~May~~ July, May 2022.

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BACKGROUND

There are many local, regional and national initiatives active in this area intended to provide guidance for interconnecting intermittent resources to the power system. These include:

- Distributed Energy Resources (DER) radially connected including Behind the Meter (BTM) resources
 - NY Department of Public Service ([DPS](#)) Interconnection Technical Working Group (ITWG)
 - [Northeast Power Coordinating Council \(NPCC\)](#) - Distributed Energy Resources (DER) Considerations to Optimize and Enhance System Resilience and Reliability (V3 12-9-21)

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- Inverter Based Resources (IBR) connected to [Bulk Electric Systems \(BES\)](#) or [Bulk Power Systems \(BPS\)](#)
 - NERC Reliability Guideline – Improvements to Interconnection Requirements for BPS-Connected Inverter Based Resources (approved September 2019)⁴
 - [Institute of Electrical and Electronics Engineers \(IEEE\) 2800 2022](#) - IEEE Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems (approved February 2022)
 - IEEE P2800.2 - Guide for Test and Verification Procedures for Inverter-Based Resources Interconnecting with Bulk Power Systems (pending)

It is intended [for the NYSRC](#) to build on these initiatives in developing new or revised NYSRC Reliability Rules.

PROPOSED SCOPE

Noting that NERC’s Reliability Guideline is intended to be a bridge solution until IEEE 2800 is approved and adopted by the relevant [authority having](#) jurisdiction, it follows that IEEE-2800 is expected to be the defining standard. ~~Therefore, since~~ NYSRC is the authority governing reliability standards in New York ~~and, it is proposed that~~ NYSRC [will](#) utilize IEEE-2800 as the basis for [development of reliability rules for New York](#) ~~it’s rules development~~.

The associated BPS standard IEEE P2800.2 covers IBR test and verification conformance procedures and has an expected approval date of Q2, 2024. However, it is not recommended to delay adoption of P2800 pending approval of P2800.2 given [CLCPA’s Scenario C](#) ~~the~~ projected need for ~156,000 MW of ~~new~~ [new](#) IBR resources by 2025 and significantly more in later years, [as well as the potential interconnection of ~75,000 MW of IBR resources listed in the NYISO’s interconnection queue](#). Therefore, ~~recognizing that it may take several years to complete,~~ it is proposed that NYSRC immediately start the process of developing Potential Reliability Rules (PRRs) based on IEEE-2800 and other requirements ~~for~~ [based on](#) IBR resource [interconnections](#) ~~penetration~~.

⁴ [NERC: Improvements to Interconnection Requirements for BPS-Connected Inverter-Based Resources](#)

The proposed white paper scope is broken into ~~three~~ phases as follows:

Phase 1

- Concentrate initially on IBR resources connected to the NYCA BPS system or at lower voltages but under NYISO control
- Form an IBR interconnection working group to implement the adoption of IEEE 2800 for all new IBR interconnections to the NYCA BPS.
- Work closely with the NYISO, Transmission Owners, (TOs), DPS and manufacturers to obtain their input
- Consider IBR aspects for inclusion:
 - Data specifications
 - Wind, solar & storage model standardization
 - Model verification requirements
 - Protection and performance settings
- Monitor NERC, NPCC, NERC, EPRI and IEEE forums
- Monitor best practices from other ISOs, e.g. ERCOT, ISO-NE
- Develop PRRs as appropriate
 - IBR interconnection requirements

Phase 2

- Develop PRRs as appropriate
 - Resource adequacy requirements
 - TransmissionSystem planning requirements
 - System performance evaluations (e.g.e.g., RNA, CRP, IRM)

Phase ~~3~~2

- It is recognized that BTM DER may have a significant impact on BPS performanceperformance, but that initiative is presently covered by DPS's ITWG activities.
- It intended to closely coordinate with ITWG and develop new or revised NYSRC Reliability Rules covering BPS performance as affected by BTM DER.

ANTICIPATED WHITE PAPER COMPLETION

- OctoberJuly 2022.

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