

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 Draft Scoping Plan indicates that in the power sector new storage and variable resource capacity will be required starting in 2025 at ~16,000 MW and rising to ~116,000 MW in 2050 in order to meet these goals. It is noted that the NYISO interconnection queue currently has 39,444 MW of wind, solar and storage resources listed. This capacity will be interconnected to the NYCA BPS by Inverter Based Resources (IBR) which have radically different performance characteristics from conventional generators.

It is clear that there will be a unprecedented change in the magnitude and nature of NYCA's resource capacity in the near future. In addition, several recent disturbances concerning mis-operation of intermittent resources in California and Texas underline the need for improved reliability standards in this area.

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 high levels of renewable resource capacity as mandated by the CLCPA. It considers developing new rules and modifying existing rules including resource adequacy and transmission planning design, recognizing the transition to a greater reliance on DER and utility connected intermittent renewable resources and energy storage systems. This document fulfills progress target A-2a which is to present scope for a white paper to NYSRC's EC by May, 2022.

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 Interconnection Technical Working Group (ITWG)
 - NPCC - Distributed Energy Resources (DER) Considerations to Optimize and Enhance System Resilience and Reliability (V3 12-9-21)

- Inverter Based Resources (IBR) connected to BES or BPS
 - NERC Reliability Guideline – Improvements to Interconnection Requirements for BPS-Connected Inverter Based Resources (approved September 2018)
 - 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 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 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, it is proposed that NYSRC utilize IEEE-2800 as the basis for 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 the projected need for ~16,000 MW of IBR new resources by 2025 and significantly more in later years. Therefore, recognizing that it may take several years to complete, it is proposed that NYSRC immediately start the process of developing Potential Reliability Rules based on IEEE-2800 and other requirements based on IBR resource penetration.

The proposed white paper scope is broken into two 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, 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 NPCC, NERC and IEEE forums
- Develop PRRs as appropriate
 - IBR interconnection requirements
 - Resource adequacy requirements
 - System planning requirements
 - System performance evaluations (e.g. RNA, CRP, IRM)

Phase 2

- It is recognized that BTM DER may have a significant impact on BPS performance 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

- July 2022.

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