



JOINT UTILITIES OF NEW YORK

Interconnection Technical Working Group Energy Storage Systems - DRAFT

September 27, 2017



Energy Storage Overview

Interconnection Requirements

- The proposed requirements submitted for discussion are intended to cover energy storage interconnection application materials not explicitly enumerated in the NY SIR, ITWG documentation, or published individual utility interconnection requirements
- Additional requirements may arise through coordination with the IPWG

Intended Energy Storage Scope

- Behind-the-meter (BTM) mass market residential, commercial, and industrial scale energy storage applications
- Remote net metered, net metered, or community distributed generation (CDG) energy storage assets coupled with distributed generation (DG)
- Standalone energy storage systems (ESS) with interconnection to the distribution system (later priority)

Excluded Energy Storage Scope

- Community microgrids and other multi-tenant or individual facility islanding applications are **out of scope** for the proposed requirements

High Level Requirements In Scope

1. Technology: electricity battery storage
2. Nameplate Rating: total aggregate nameplate rating of the DG and coupled ESS that is less than or equal to 5 MW each for application according to the NYS SIR. ESS rating not to exceed DG rating.
3. Charging: ESS may be charged from DG only, a combination of DG and distribution system supply, or from distribution system supply only.
4. Dispatch/discharge: dispatch or discharge of ESS and DG may be limited to no net export of energy or nameplate of DG only, or may have no limitations.

Note: Electricity battery storage is the prevalent type of energy storage marketed to the JU at present; consequently this is the JU's current focus.



Application Process Impacts

Storage and Generation

- While energy storage applications can be submitted individually, system impact studies must be performed by combining generation and load characteristics

CESIR Timeline

- Permit additional time due to additional data requests, modeling, control system review, and review of multiple scenarios

Load and Discharge Applications

- Currently require separate applications for load and generation
- The Joint Utilities are open to streamlining the application and review process for generation plus load application for energy storage systems



System Equipment Characteristics (Section III)

- ❑ Requirements 3.A through 3.M are designed to provide the utility with:
 - Sufficient detail of the nature of the equipment used for interconnection
 - Battery chemistry
 - Equipment model make and number
 - Nameplate ratings
 - Equipment certifications
 - Integrated protection
 - The full range of **potential** operating functionality
 - Intended use case(s)
 - Inverter power factor operating range
 - Depth of charge/discharge, i.e., ramp rates
 - Grid support functions

System Electrical Characteristics (Section IV)

□ Requirements 4.A through 4.J are designed to provide the utility with:

- The **intended** operational characteristics
 - Project intent, operating schedule, plant management system
 - Typical 24-hour charge/discharge profile with intended use case(s)
 - Charging/discharging configuration(s) and ramp rate(s)
- Details of the equipment used
 - Grounding equipment
 - Short circuit current capabilities and harmonic output
 - Descriptions of any software functionality
 - Standard communication hardware interfaces, to include software protocols and data models
 - Requirement for smart inverter capability



Power System Control Requirements

- A utility grade reverse power flow relay will be required for all paired systems above 300kW aggregate nameplate rating.

- Controller settings must be protected from being altered following utility approval.

- Reconciliation of nameplate ratings and total export allowances must be finalized through the IPWG and Commission.



Market Participation (Section V)

- Requirements 5.A through 5.D are designed to provide the utility with any relevant market participatory parameters to the proposed interconnections operation schedule
 - NYISO or other market participation, with a description of anticipated markets
 - Typical 24-hour schedule of the ESS and/or DG system within the market structure
 - Potential for compensation under the VDER Order