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.
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
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
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.
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