

# Hybrid Storage: Proposed Energy market tariff revisions for Co-located Storage Resources (CSR)

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**ICAPWG/MIWG**

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WebEx

# Agenda

- **Project Background**
- **Market Design Overview**
- **Proposed tariff revisions to Market Administration and Control Area Services Tariff (MST)**
- **Next Steps**

# Previous Presentations on Market Design Proposal

Date	Working Group	Discussion Points and Links to Materials
01-13-20	ICAPWG/MIWG	Hybrid Storage Model Project Kick-Off <a href="https://www.nyiso.com/documents/20142/10252714/Hybrid%20Storage%20Model_MIWG_Jan%2013%202019.pdf/caf29abe-a431-a2d1-358d-43326153824a">https://www.nyiso.com/documents/20142/10252714/Hybrid%20Storage%20Model_MIWG_Jan%2013%202019.pdf/caf29abe-a431-a2d1-358d-43326153824a</a>
04-14-20	ICAPWG/MIWG	Hybrid Storage Model – Initial Market Design Concept Overview <a href="https://www.nyiso.com/documents/20142/11904936/Hybrid%20Storage%20Model%20MIWG%2004142020%20Final.pdf/08841944-5251-4497-c52b-105151f150ad">https://www.nyiso.com/documents/20142/11904936/Hybrid%20Storage%20Model%20MIWG%2004142020%20Final.pdf/08841944-5251-4497-c52b-105151f150ad</a>
05-11-20	ICAPWG/MIWG	Hybrid Storage Interconnection Proposal <a href="https://www.nyiso.com/documents/20142/12465245/Hybrid%20Storage%20Interconnection_0511%20MIWG_ICAPWG_FINAL.pdf/0740db02-ac07-e7f4-42b4-0b17da0e82eb">https://www.nyiso.com/documents/20142/12465245/Hybrid%20Storage%20Interconnection_0511%20MIWG_ICAPWG_FINAL.pdf/0740db02-ac07-e7f4-42b4-0b17da0e82eb</a>
06-30-20	ICAPWG/MIWG	Hybrid Storage: Proposal for participation options <a href="https://www.nyiso.com/documents/20142/13434223/Hybrid%20Storage%206.30.2020%20ICAPWG_MIWG%20draft%20v5_final.pdf/176a272a-cc21-08ef-749a-c4a157fe2bc3">https://www.nyiso.com/documents/20142/13434223/Hybrid%20Storage%206.30.2020%20ICAPWG_MIWG%20draft%20v5_final.pdf/176a272a-cc21-08ef-749a-c4a157fe2bc3</a>
07-22-20	ICAPWG/MIWG	Hybrid Storage: Energy Market Participation rules for Co-located Storage Resources <a href="https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20ICAPWG%20MIWG%2007.22.20%20Energy%20Market%20Rules%20%20final.pdf/89700275-108e-8002-1e44-aaffe1712f0e">https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20ICAPWG%20MIWG%2007.22.20%20Energy%20Market%20Rules%20%20final.pdf/89700275-108e-8002-1e44-aaffe1712f0e</a>

# Previous Presentations on Market Design Proposal (cont'd)

Date	Working Group	Discussion Points and Links to Materials
07-22-20	ICAPWG/MIWG	Hybrid Storage Model: Interconnection and Capacity <a href="https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20Interconnection%20and%20Capacity_07222020%20MIWG_FINAL.pdf/e3ba434d-a7ac-21d2-855d-c9cb249da614">https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20Interconnection%20and%20Capacity_07222020%20MIWG_FINAL.pdf/e3ba434d-a7ac-21d2-855d-c9cb249da614</a>
08-10-20	ICAPWG/MIWG	Hybrid Storage: Market Design for Co-located Storage Resources <a href="https://www.nyiso.com/documents/20142/14404876/Hybrid%20Storage%20ICAPWG%20MIWG%20081020%20final.pdf/f414f66a-eee0-3a3c-393d-6b075fe5a1ba">https://www.nyiso.com/documents/20142/14404876/Hybrid%20Storage%20ICAPWG%20MIWG%20081020%20final.pdf/f414f66a-eee0-3a3c-393d-6b075fe5a1ba</a>

# Project Background

# A Grid in Transition – The Plan

- Carbon Pricing
- Comprehensive Mitigation Review
- DER Participation Model
- Energy Storage Participation Model
- Hybrid Storage Model

Aligning Competitive Markets and New York State Clean Energy Objectives



- Enhancing Energy & Shortage Pricing
  - Ancillary Services Shortage Pricing
  - Constraint Specific Transmission Shortage Pricing
  - Enhanced Fast Start Pricing
- Review Energy & Ancillary Services Product Design
  - More Granular Operating Reserves
  - Reserve Enhancements for Constrained Areas
  - Reserves for Resource Flexibility

Valuing Resource & Grid Flexibility



- Enhancements to Resource Adequacy Models
- Revise Resource Capacity Ratings to Reflect Reliability Contribution
  - Expanding Capacity Eligibility
  - Tailored Availability Metric
- Capacity Demand Curve Adjustments

Improving Capacity Market Valuation



# Project Background

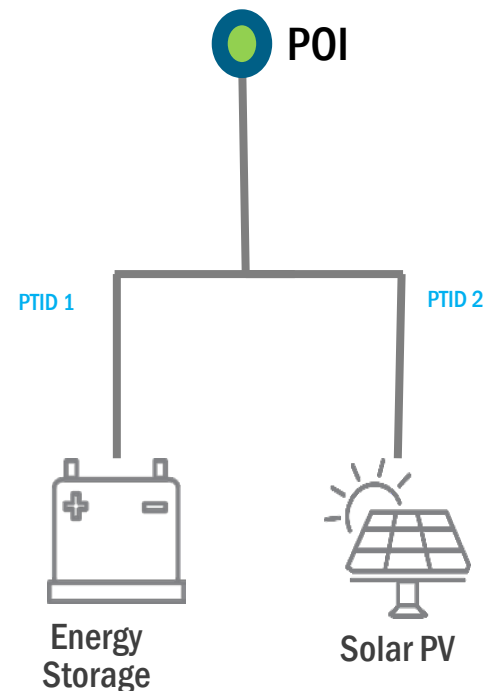
- **This project seeks to explore market participation option(s) for co-located front-of-the-meter generators and energy storage resources**
  - Incentives along with improvements in flexibility and availability are motivating developers to couple generation resources with storage resources
- **Modifications to existing market rules will be developed to accommodate Co-Located Storage Resources (CSR) by the end of 2020**

# Market Design Overview for Co-Located Storage Resources (CSR)



# CSR: Market Design Overview

- Each unit within a CSR will have a distinct PTID/bid/schedule/settlement
- The NYISO proposes to require a CSR to be represented by a single Billing Organization and to have a single bidding agent
- Units will participate under their own participation model. In the illustrative example shown here, Solar PV will participate as an Intermittent Power resource (IPR) and Energy Storage will participate under Energy Storage Resource (ESR) model
  - Only the ESR unit will be eligible to provide Reserves and Regulation
- The NYISO plans to utilize a CSR scheduling constraint to determine feasible energy and reserve schedule for units within the CSR
- All units within a CSR will be settled at the LBMP at POI



# Proposed Energy Market Tariff revisions

# Initial, Partial Set of Proposed Energy Market Tariff Revisions

- Redlined version of Tariff revisions to reflect market participation rules of CSR proposal are posted with today's meeting materials
- Tariff sheets with DER revisions have been used to draft the CSR rules
  - CSR rules are red lined
- Revised sections pertains to
  - MST 2 Definitions
  - MST 4 Market Services: Rights and Obligations

# MST 2 - Definitions

- **The NYISO proposes revisions to these sections**

- 2.1; 2.3; 2.9; 2.15; 2.23
- Revisions in MST 2.23 pertain to Solar on Dispatch(SoD) rules.
  - CSR revisions will build upon the SoD revisions. The NYISO plans to bring proposed SoD tariff revisions to stakeholders in September 2020.

- **New terms have been added :**

- **Co-located Storage Resources (“CSR”):** A wind or solar Intermittent Power Resource and an Energy Storage Resource that: (a) are both located behind a single Point of Injection (as defined in Section 1.16 of the OATT); (b) participate in the ISO Administered Markets as two distinct resources; and (c) share a set of CSR Scheduling Limits. Resources that serve a Host Load may not participate in the ISO-Administered Markets as components of a CSR, instead they must participate as a BTM:NG Resource or a Distributed Energy Resource.
- **CSR Scheduling Limits:** The CSR injection Scheduling Limit sets the maximum, combined Regulation Capacity, Operating Reserve and Energy injection schedules for, and the maximum net injection by a CSR’s Generators. The CSR withdrawal Scheduling Limit sets the maximum allowed net withdrawal schedule for and maximum net withdrawal by the Energy Storage Resource.

# MST Section 2 - Definitions

- **Additions/revisions to existing defined terms (underlined)**
  - **Out-of-Merit:** The designation of Resources committed and/or dispatched by the ISO at specified output limits for specified time periods to meet Load and/or reliability requirements that differ from or supplement the ISO's security constrained economic commitment and/or dispatch. The NYISO may also use Out-of-Merit to set CSR Scheduling Limits for specified time periods to meet Load and/or reliability requirements that differ from or supplement the ISO's security constrained economic commitment and/or dispatch.

# MST 4 Market Services: Rights and Obligations

- **The NYISO proposes revisions to these sections**
  - 4.1; 4.2.1.3; 4.4.1.2; 4.4.2.1
- **Proposed changes include:**
  - Co-located Storage Resources can each offer all of their available capability into the Day-Ahead and Real-Time Markets. The ISO will account for the CSR Scheduling Limits in the schedules and dispatch it issues to CSR Generators.
  - A Generator with a real time physical operating problem that makes it impossible for it to operate in the bidding mode in which it was scheduled Day-Ahead or to achieve or comply with applicable operating parameters or requirements should notify the ISO.
    - NYISO Operations should be informed if a CSR Scheduling Limit needs to be reduced in real-time.

# Next Steps

# Next Steps

- **The NYISO is targeting to return to a future working group to discuss the questions and concerns raised by stakeholder's on August 10 ICAPWG/MIWG**
- **The NYISO will continue to review its proposed Energy and Ancillary Services Market Tariff revisions with stakeholders as they are developed**
- **NYISO will return to future working groups to discuss Tariff revisions to other sections**



# Questions?

# Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

