New York ISO
Independent System Operator

Hybrid Storage: Proposed Tariff Revisions for Co-located Storage Resources (CSR)

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Capacity Market Design

ICAPWG/MIWG

August 25, 2020
WebEx

Agenda

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

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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 https://www.nyiso.com/documents/20142/10252714/Hybrid%20Storage%20Model_MIWG_Jan%2013%202019.pdf/caf29abe-a431-a2d1-358d-43326153824a
04-14-20	ICAPWG/MIWG	Hybrid Storage Model – Initial Market Design Concept Overview https://www.nyiso.com/documents/20142/11904936/Hybrid%20Storage%20Model%20MIWG%2004142020%20Final.pdf/08841944-5251-4497-c52b-105151f150ad
05-11-20	ICAPWG/MIWG	Hybrid Storage Interconnection Proposal https://www.nyiso.com/documents/20142/12465245/Hybrid%20Storage%20Interconnection_0511%20MIWG_ICAPWG_FINAL.pdf/0740db02-ac07-e7f4-42b4-0b17da0e82eb
06-30-20	ICAPWG/MIWG	Hybrid Storage: Proposal for participation options https://www.nyiso.com/documents/20142/13434223/Hybrid%20Storage%206.30.2020%20ICAPWG_MIWG%20draft%20v5_final.pdf/176a272a-cc21-08ef-749a-c4a157fe2bc3
07-22-20	ICAPWG/MIWG	Hybrid Storage: Energy Market Participation rules for Co-located Storage Resources https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20ICAPWG%20MIWG%2007.22.20%20Energy%20Market%20Rules%20%20final.pdf/

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 https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20Interconnection%20and%20Capacity_07222020%20MIWG_FINAL.pdf/e3ba434d-a7ac-21d2-855d-c9cb249da614
08-10-20	ICAPWG/MIWG	Hybrid Storage: Market Design for Co-located Storage Resources https://www.nyiso.com/documents/20142/14404876/Hybrid%20Storage%20ICAPWG%20MIWG%20081020%20final.pdf/f414f66a-eee0-3a3c-393d-6b075fe5a1ba
08-19-20	ICAPWG/MIWG	Hybrid Storage: Proposed Energy market tariff revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/14617012/02_Hybrid%20Storage%20Energy%20tariff%20ICAPWG%20MIWG%2008.19.20%20draft%20final.pdf/a6b81cb1-fe9a-72cd-2a8f-75befefc4afa

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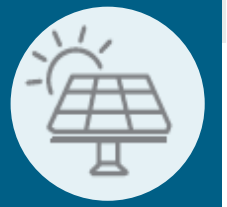
Project Background

A Grid in Transition – The Plan

Aligning Competitive Markets and New York State Clean Energy Objectives

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



Valuing Resource & Grid Flexibility

- **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

Improving Capacity Market Valuation

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

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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**

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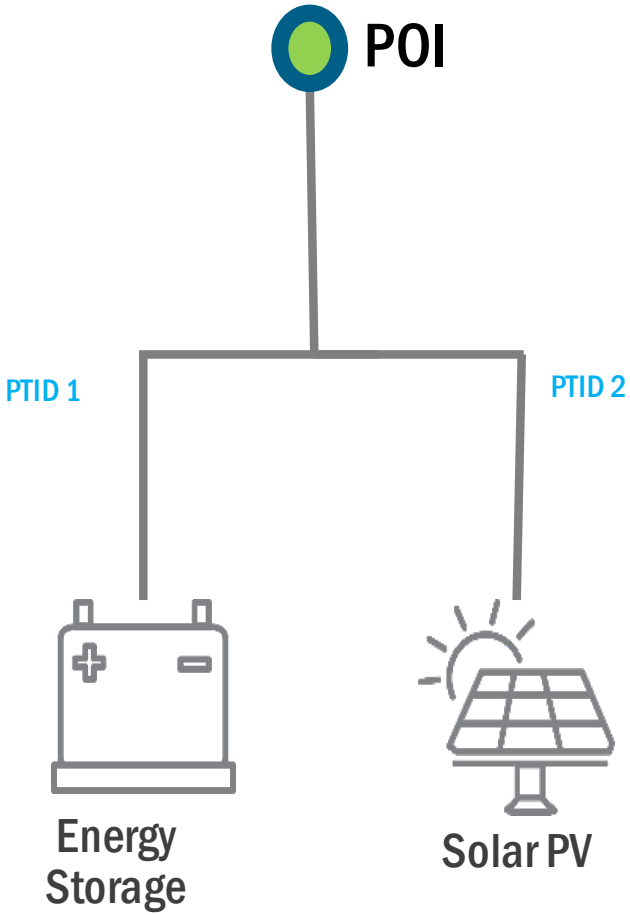
Market Design Overview for Co-located Storage Resources (CSR)

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
- The Generator and Energy Storage Resource will utilize the market rules for the particular resource type. 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 Limitation 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



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Proposed Capacity Market Tariff Revisions

Initial Set of Proposed Capacity Market Tariff Revisions

- Redlined version of Tariff revisions to reflect market participation rules of CSR proposal are posted with today's meeting materials
- Revised sections
  - MST 5

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MST 5 Control Area Services: Rights & Obligations

- **The NYISO proposes revisions to the following sections:**
  - 5.12.1; 5.12.5; 5.12.6; 5.12.7; 5.12.12; 5.18.2; 5.18.3
- **Proposed changes include:**
  - Sec. 5.12.1:
    - Generators that participate as CSR must independently comply with all applicable market rules for ESRs and IPRs, as appropriate.
    - Units must independently obtain CRIS in order to qualify as Installed Capacity Suppliers.
    - Each Generator that participates as a CSRs must provide CSR Scheduling Limits for each hour of the Day-Ahead Market.
  - Sec. 5.12.5:
    - Each Generator that participates as a CSR must provide outage data or other operational information to allow the NYISO to validate CSR Scheduling Limits (which will be incorporated into the UCAP calculations of each Generator pursuant to Sec. 5.12.6.)

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MST 5 Control Area Services: Rights & Obligations (cont'd)

- **Proposed changes:**
  - Sec. 5.12.6
    - Unforced Capacity calculation for an ESR and IPR that is participating as part of a CSR shall account for reductions to the CSR Scheduling Limits.
  - Sec. 5.12.7
    - Each Generator participating as a CSR must, on a daily basis, and for each hour of the Day-Ahead Market submit the CSR injection Scheduling Limit and CSR withdrawal Scheduling Limit, and notify the NYISO of any derate or outage to the interconnection facilities comprising the point of interconnection.
      - This obligation is in addition to complying with the daily "Bid/Schedule/Notify" obligation applicable to the ESR or IPR.
      - The sum of the CSR Scheduling Limit and the derate or outage must be equal to or greater than the sum of the ICAP Equivalent of UCAP supplied by the IPR and the applicable ESR Bid/Schedule/Notify obligation.

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MST 5 Control Area Services: Rights & Obligations (cont'd)

- **Proposed changes :**
  - Sec. 5.12.12.2
    - Individual Generators comprising a CSR may be subject to financial sanctions when one or both fail to comply with MST Section 5.12.7.1.
  - When a Generator that participates as a CSR is subject to penalties for (i) failing to meet the Bid/Schedule/Notify requirements of Sec. 5.12.1.6, 5.12.1.10, or 5.12.7, and (ii) failing to meet the requirements of Sec. 5.12.7.1, the NYISO will assess only one of the two penalties.
    - NYISO will assess only the larger penalty for a given Day-Ahead Market Hour.

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MST 5 Control Area Services: Rights and Obligations (cont'd)

- **Proposed changes:**
  - Sections 5.18.2 and 5.18.3:
    - If one of the two Generators in a CSR enters an ICAP Ineligible Forced Outage or Mothball Outage but the other CSR Generator continues operating, the remaining Generator may continue to participate as a Generator in a CSR unless or until the Generator in the outage retires

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Next Steps

Next Steps

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

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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

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