

# Hybrid Aggregated Storage (HSR) Model – CSR Market Design Proposal Updates

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New Resource Integration

**MIWG/ICAPWG**

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# Agenda

- **Project Background**
- **CSR Market Design Proposal Updates**
  - CSR Metering Proposal
  - CSR Energy Market Settlements Proposal
  - CSR Energy Market Scheduling Proposal
- **MST 15.3A – Proposed Updates**

# Previous Presentations for Hybrid Aggregated Storage (HSR) Model (2022) and Final CSR Presentation (2020)

Date	Working Group	Topic/Links to Materials
August 24 <sup>th</sup> , 2022	MIWG/ICAPWG	<a href="#"><u>Hybrid Storage Model – CSR Market Design Proposal Updates</u></a>
August 9 <sup>th</sup> , 2022	MIWG/ICAPWG	<a href="#"><u>Hybrid Aggregated Storage (HSR) Model – Energy and Capacity Market Design Proposal</u></a>
July 15 <sup>th</sup> , 2022	MIWG/ICAPWG	<a href="#"><u>Hybrid Aggregated Storage (HSR) Model – Energy and Ancillary Services Market Design Proposal Update</u></a>
May 11 <sup>th</sup> , 2022	MIWG/ICAPWG	<a href="#"><u>NYISO Hybrid Aggregated Storage Resource (HSR) Model Use Case and Proposal Update</u></a>
March 25 <sup>th</sup> , 2022	MIWG/ICAPWG	<a href="#"><u>Hybrid Storage Model – Energy and Capacity Market Design Proposal</u></a>
October 27 <sup>th</sup> , 2020	MIWG/ICAPWG	<a href="#"><u>Hybrid Storage Model: Comprehensive CSR Market Design Proposal</u></a>

# Presentation Format

- **This presentation contains proposed modifications to the CSR project design to accommodate additional use cases, with these slides covering only a selection of topics where the changes will be necessary**
  - The proposed substantive modifications are represented via redlines to previous CSR presentation materials

# Project Background

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- **An HSR consists of at least one Energy Storage Resource (ESR) and at least one Intermittent Power Resource (IPR) and/or Run-of-River (RoR) Hydro**
  - This model will support Wind, Solar, Landfill Gas, RoR Hydro, and ESR(s) that aggregate and share a POI operating as a single dispatchable resource
- **As part of the HSR project, the Co-located Storage Resource (CSR) model will be updated to allow for:**
  - An ESR + a Landfill Gas Generator
  - An ESR + a RoR Hydro Generator
  - An ESR + a Fast-Start Resource

# Project Background

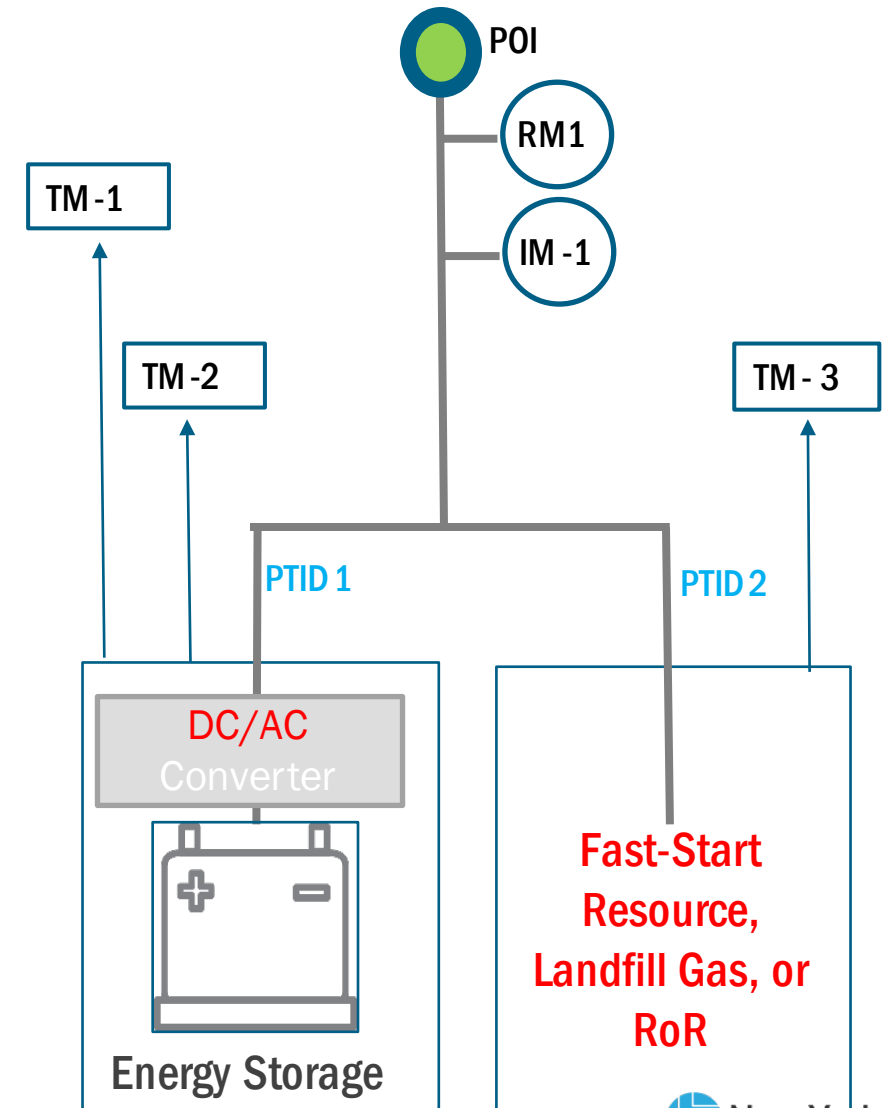
- This presentation builds on materials presented at the August 24, 2022, MIWG on “Hybrid Storage Model: CSR Market Design Proposal”
- The previous presentation discussed updates to the CSR model to accommodate the additional use cases, covering the following topics:
  - CSR Market Design Overview Updates
  - CSR Capacity Market Participation Proposal Updates
  - CSR Energy Market Participation Proposal Updates

# CSR Metering Proposal



# CSR Metering Proposal

Meter Designation	Meter Requirements	Data flows
RM1	Revenue grade; dual – channel meter; reported by a Meter Authority	Hourly data
IM -1	Instantaneous meter	6 second aggregated output telemetry from CSR
TM - 1	SCADA data	ESR State of Charge (SOC) telemetry
TM -2	SCADA data	6-second aggregated output telemetry from ESR (telemetry should be compensated to the equivalent AC output at the POI)
TM -3	SCADA data	6 second aggregated output telemetry from Fast-Start Resources, Landfill Gas, and RoR for on-line status



# CSR Metering Proposal (cont'd)

- **CSR will be required to have a dual channel Revenue Grade Meter (AC) at the Point of Injection (POI)**
  - Meter must be capable of separately recording Energy injections and Energy withdrawals
- **CSR shall provide 6 second telemetry at the POI**
  - Telemetry data must reflect the total Energy injections and Energy withdrawals of the CSR
- **Each unit shall provide 6 second telemetry for output and control signals. The telemetry should be compensated to the equivalent AC output at the POI**
  - For the ESR unit, 6 second Energy Level (state of charge) telemetry data will be required
  - For the IPR, wind or solar forecast information will be required
    - Forecast information shall include all the meteorological data as well as outage information
- **6-Second telemetered data from the units will be used for real-time operations**
- **Revenue Grade Meter data at the POI will be used for settlement purposes**
- **For a CSR that contains a Fast-Start Resource, the Fast-Start Resource will be required to provide the breaker status and Generator status**

# CSR Metering Proposal (cont'd)

- Proposal for allocation of Energy injections and Energy withdrawals to ESR, ~~and~~ intermittent renewable units, **RoR units, and Fast-Start Resources**
  - Hourly injection (MWh) and withdrawal (MWh) will be determined from the revenue grade meter at the POI
  - Each Generator's individual telemetered output will be used to determine the injections and withdrawals (MWh) allocated to the ESR and to the wind, ~~or~~ solar, or landfill gas IPR, **RoR, or Fast-Start Resource**
- All energy withdrawals will be allocated to the ESR

# CSR Energy Market Settlements Proposal

# CSR Energy Market Settlements

- Settlement will occur at the unit level
- The settlement rules for Generators that participate in a CSR are proposed to be the same as those applicable to standalone ESRs, ~~and IPRs~~, **Limited Control Run of River Generators, and Fast-Start Resources**
  - Some specific settlement provisions that were discussed during ICAPWG/MIWG, are included on subsequent slides
  - **However, landfill gas and RoR generators that participate in a CSR will be subject to the Wind and Solar Output Limit Flag. Additional rules for landfill gas and RoR generators when the Wind and Solar Output Limit Flag is in effect are further discussed below.**
- **The NYISO operators will be able to issue an Out-of-Merit (OOM) to change the CSR Scheduling Limits in Real-Time for ISO/TO reliability or at the Market Participant's request**
  - When the ISO uses Out-of-Merit to reduce the CSR Scheduling Limit for NYCA or local reliability, the Out-of-Merit for NYCA or local reliability designation will apply to each of the Generators that is subject to the affected CSR Scheduling Limit

# CSR Energy Market Scheduling Proposal

# Energy Market Scheduling for CSR

- When the total CSR schedules are near the CSR injection Scheduling Limit, the solar, ~~or~~ wind or landfill gas IPR unit, or the Limited Control Run of River Hydro Resource will be instructed not to exceed its economic basepoint
- This instruction will be communicated via a Wind and Solar Output Limit flag
  - The purpose of this treatment is to ensure that reliability services, such as operating reserves and regulation service, are deliverable by the ESR at times when the schedules of the CSR are near or equal to the CSR injection Scheduling Limit
  - This Output Limit flag will also be applied to landfill gas IPR and Limited Control Run of River Hydro Resources that participate as CSR

# Energy Market Scheduling for CSR (cont'd)

- Settlement rules that will apply when Wind and Solar Output Limit is in effect are consistent with current provisions for wind generators:
  - IPR or RoR unit will not be eligible for compensation for generation greater than Real-Time Scheduled Energy Injection (beyond 3% tolerance)
  - IPR or RoR unit will be eligible for over-generation charges, when such output limit is in effect
- “Wind and Solar Output Limit” on the intermittent unit will be set if certain conditions are met
  - Condition 1: ESR unit either has a non-zero ancillary services award or a positive energy schedule; and
  - Condition 2: The sum of the CSR Generators Energy + Operating Reserves + Regulation Service schedules is greater than or equal to a threshold ( X % ) times the CSR Injection Limit
    - The NYISO has proposed an initial value of 90% for this threshold. The NYISO will monitor this value as it gains operational experience with Co-located storage resources
    - The specified threshold percentage is posted to the NYISO’s website<sup>1</sup>

<sup>1</sup> See TB-154, “Wind and Solar Resource Bidding, Scheduling, Dispatch, and Settlement:

[https://www.nyiso.com/documents/20142/2931465/tb\\_154.pdf/9b1fb750-a698-c596-de0a-38071af33ad0](https://www.nyiso.com/documents/20142/2931465/tb_154.pdf/9b1fb750-a698-c596-de0a-38071af33ad0)



# MST 15.3A – Proposed Updates

# MST 15.3A.1.1 – Overgeneration Charges

- The proposed language in MST 15.3A.1.1 supports the update to apply the Wind and Solar Output Limit to landfill gas and RoR resources that participate as part of a CSR
- Proposed added language:
  - Intermittent Power Resources that depend on landfill gas as their fuel or Limited Control Run-of-River Hydro Resources that participate in the ISO-Administered Markets as part of a Co-located Storage Resource, for which the ISO has imposed a Wind and Solar Output Limit, that operates at a level above their schedule shall pay an overgeneration charge to the ISO, unless the Resource's operation is within a tolerance described below.
- See MST 15.3A in the attached meeting materials for the complete proposed language

# Our Mission & Vision



## Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



## Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

# Questions?