

NYISO Hybrid Aggregated Storage Resource (HSR) Model Use Case and Proposal Update

James Pigeon

Manager, New Resource Integration, Market Design

MIWG/ICAPWG

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Background

Stakeholder Feedback

■ Stakeholder requested use cases:

- A Hybrid Storage model that allows for an Energy Storage Resource (ESR) and any type of generator, ESR + IPR, ESR + RoR, ESR + CT, etc.
 - Energy Storage Resources (ESR) include batteries and other technologies that can store energy and inject it later with no transition time between injecting to the grid and withdrawing from the grid
 - Intermittent Power Resource (IPR) include Solar, Wind, and Landfill Gas
 - Limited Control Run of River (RoR) include hydro facilities whose output depends on river flows and releases of water
 - Combustion Turbines (CT) include simple cycle machines that can start in 30 minutes or less and depending on technology can be either block loaded or have a dispatchable range
- Allowing an ESR + CT to qualify for spin reserves

■ For an HSR that includes a CT, stakeholders have also requested the ability to change the amount and type of reserves (spin vs Non-spin) offered on an hour to hour basis

Proposal for Use Cases

Use Cases and Possible Participation Models

■ Use Case 1 - ESR + 10 or 30 minute CT

- 1a – Could participate as a Generator [1 PTID]
- 1b – Could participate as Hybrid Co-located Storage Resources (CSR) [2 PTIDs]

■ Use Case 2 - ESR + (IPR or RoR)

- 2a - Could participate as Hybrid Co-located Storage Resources (CSR) [2 PTIDs]
- 2b - Could participate as a Hybrid Aggregated Storage Resources (HSR) [1 PTID]

ESR + CT - Use Case 1a

Generator Model

- NYISO proposes that when a combustion turbine (CT) and an ESR are **hybridized** in a manner that both are controlled by a single control system to improve some of the CT's characteristics like decreasing startup time or improving ramp rates, it will be treated like a CT that will be scheduled **considering minimum runtimes and startup notification times**
 - Allows a generator eligible to provide 30-minute non-synch reserves to potentially qualify to provide 10-minute non-synch reserves

ESR + Generator - Use Case 1b

Hybrid Co-located Storage Resource (CSR)

- NYISO proposes updating the CSR model to allow for a 10 or 30 minute CT to be scheduled considering minimum runtimes and startup notification times
- The ESR is eligible to qualify for synch reserves
- The CT is eligible for the reserves it can qualify for based on its capabilities
- CSR model is limited to **1 non-ESR Generator + 1 ESR** that share a POI/POW
 - ESRs and Generators that share the same POI/POW, but do not have limited POI/POW capabilities do not need to be a CSR and can be treated as individual Generators within the wholesale market

ESR + (Solar OR Wind OR Landfill Gas OR RoR Hydro)- Use case 2a

Hybrid Co-located Storage Resource (CSR)

- NYISO proposes updating the CSR model to allow for:
 - an ESR + a Landfill gas Generator
 - an ESR + a ROR Hydro Generator
- CSR model is limited to 1 non-ESR Generator + 1 ESR that share a POI/POW
 - ESRs and Generators that share the same POI/POW, but do not have limited POI/POW capabilities do not need to be a CSR and can be treated as individual Generators within the wholesale market

ESR + (Solar OR Wind OR Landfill Gas OR RoR Hydro) - Use case 2b

Hybrid Aggregated Storage Model (HSR)

- NYISO proposes to develop the HSR model to allow for ESR(s) + IPR(s) and/or RoR Hydro
 - This model would support Wind, Solar, Landfill Gas, RoR Hydro, and ESR(s) that aggregate and share a POI operating as a single dispatchable resource
 - The HSR model would allow for aggregations of more than 1 Generator and 1 ESR. For example, an aggregation of 1 solar Generator, 1 wind Generator, and 1 ESR would be allowed
 - ESR types are limited to technologies that can store energy and inject it later with no transition time between injecting to the grid and withdrawing from the grid, and no need for minimum run times in a particular state (i.e. withdrawal state or injection state)
 - The aggregate would qualify to provide energy based on the capabilities of all Generators and ESRs in the aggregation
 - The aggregate would qualify to provide synch reserves based on the capabilities of the ESR
 - The aggregation would also be required to update its reserves capabilities in RT after the bid window closes

NYISO Rationale

- **The NYISO believes that the proposal captures the requests of stakeholders while accounting for the operational constraints of running a power plant**
 - Although the NYISO is not proposing a single hybrid model that solves all possible configurations of generators and ESRs, the NYISO believes this proposal provides the flexibility requested by stakeholder
- **NYISO does not believe the addition of a ESR + CT decreases the probability of the CT's failure to start and therefore it cannot qualify for spin reserves as a single resource when the CT start is needed to sustain output for 60 minutes**
 - This is based on the NYISO's understanding and interpretation of NPCC Directory 5
- **Enhancing the CSR model to allow for the inclusion of CTs allows for full access to all reserves by the ESR and CT**
 - The NYISO believes this addresses the request of allowing the amount and type of reserves (spin vs NS) to be changed on an hour-to-hour basis in the HSR model
 - Additionally, this resolves any startup, run-time, down-time, etc. characteristics of the CT that could not be addressed in the HSR dispatch-only model
 - The NYISO understands that plant operators will not want to operate an ESR + CT hybrid as a dispatch-only resource that must follow dispatch instructions that do not consider the CT's startup notification time, min run time, min down time, etc.

Reserve Pickup Up (RPU) Performance

- The NYISO continues to consider the feedback received on its RPU performance and penalty proposal, and is placing this proposal on hold
- Based on the thoughtful feedback of stakeholders and the MMU, the NYISO believes it needs to consider more broadly the energy and reserve market pricing and performance incentives and penalties before further pursuing the RPU penalties as proposed
 - This work may not be completed in 2022, but is important to work through to make sure the wholesale markets can effectively and efficiently support the clean energy transition

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?