

NYISO DER Participation Model Overview & Value of DER in the NYISO- Administered Electricity Markets

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Opening Plenary Session: Thinking About the Value of DER

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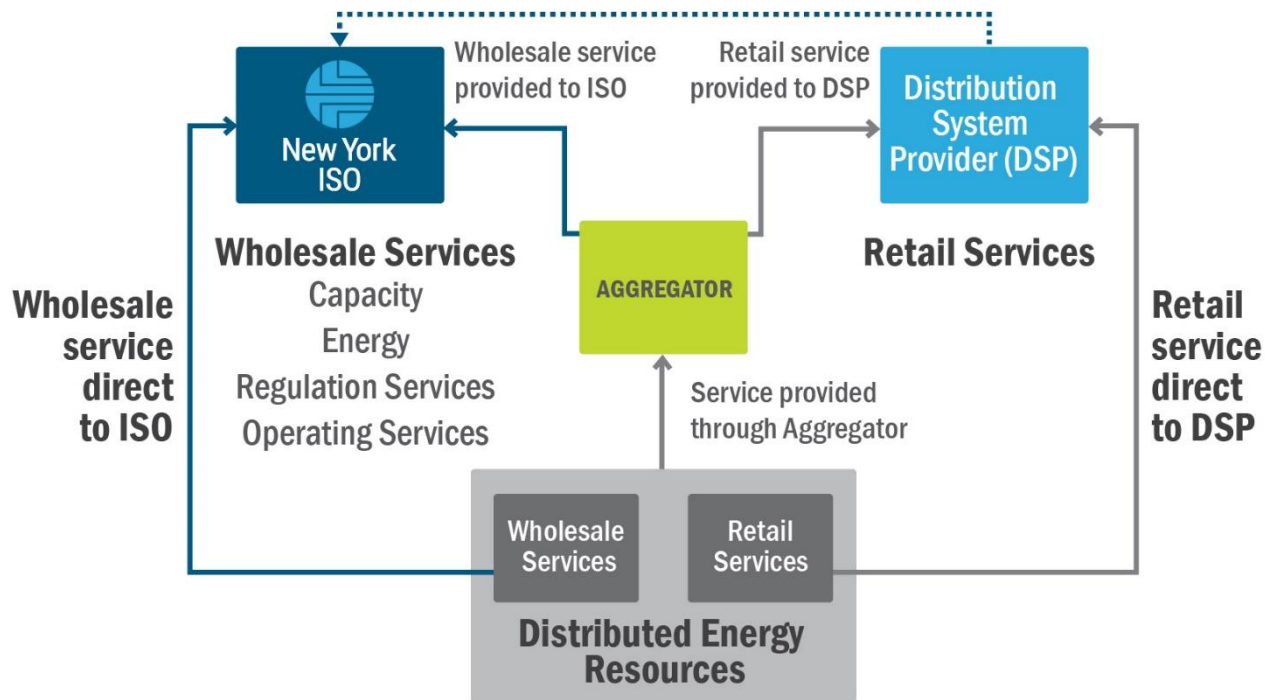
NYISO DER Roadmap Effort

- Develop and enhance participation opportunities for DER in the NYISO-administered wholesale electricity markets by creating a DER Participation Model.
- Create a model that supports the NYISO Market Design Vision – *Attract and retain the most efficient resources to meet NY's reliability needs.*

NYISO DER Definition

- **Distributed Energy Resource (DER):** (i) a facility comprising two or more Resource types behind a single point of interconnection with an Injection Limit of 20 MW or less; or (ii) a Demand Side Resource; or (iii) a Generator with an Injection Limit of 20 MW or less, that is electrically located in the New York Control Area (NYCA).
- **DER Aggregation** must be capable of responding in real-time to NYISO dispatch instructions.

Integrating DER Electricity Markets in NYISO-Administered Wholesale



Aggregations & Transmission Nodes

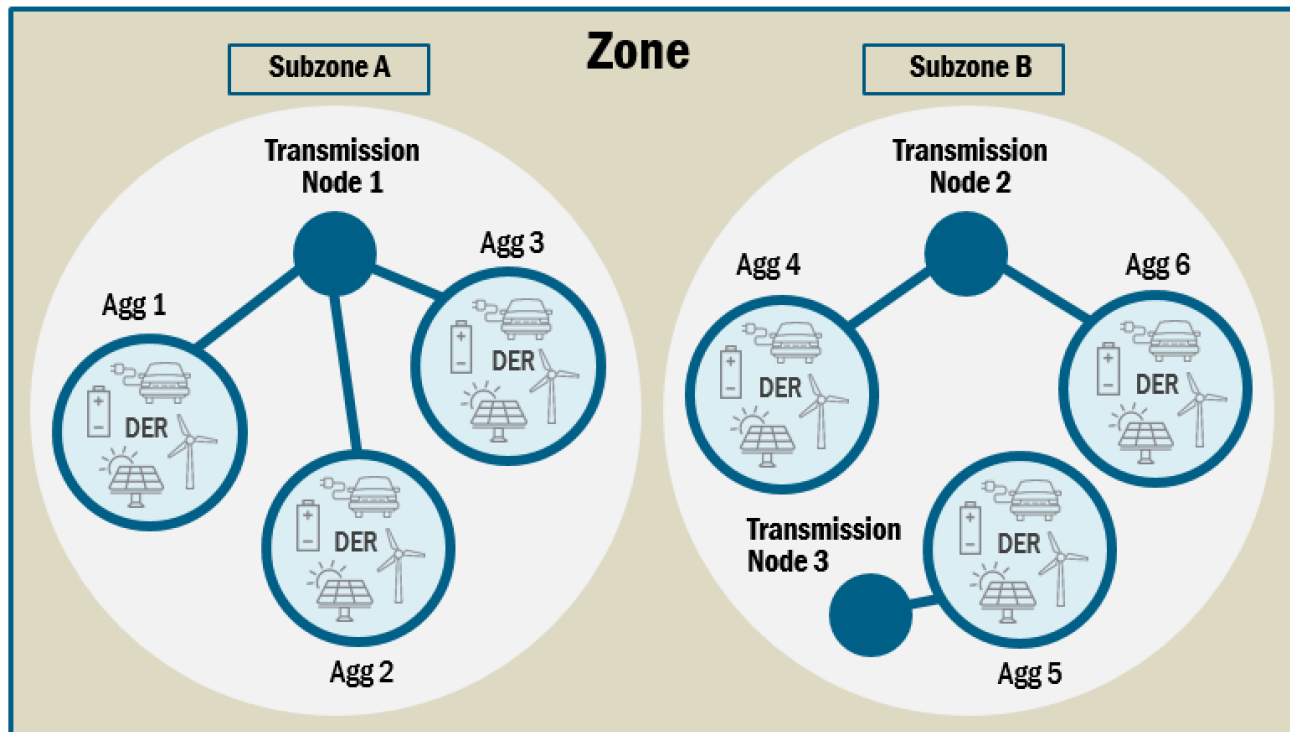
Aggregations

- DER will participate in the NYISO electricity markets in Aggregations, which allow facilities to act in concert to meet minimum eligibility requirements
- Aggregations may qualify to provide Energy, Capacity and Ancillary Services
- Minimum offer requirements for all Aggregations will be 100 kW
- There is no maximum Aggregation size

Aggregations & Transmission Nodes

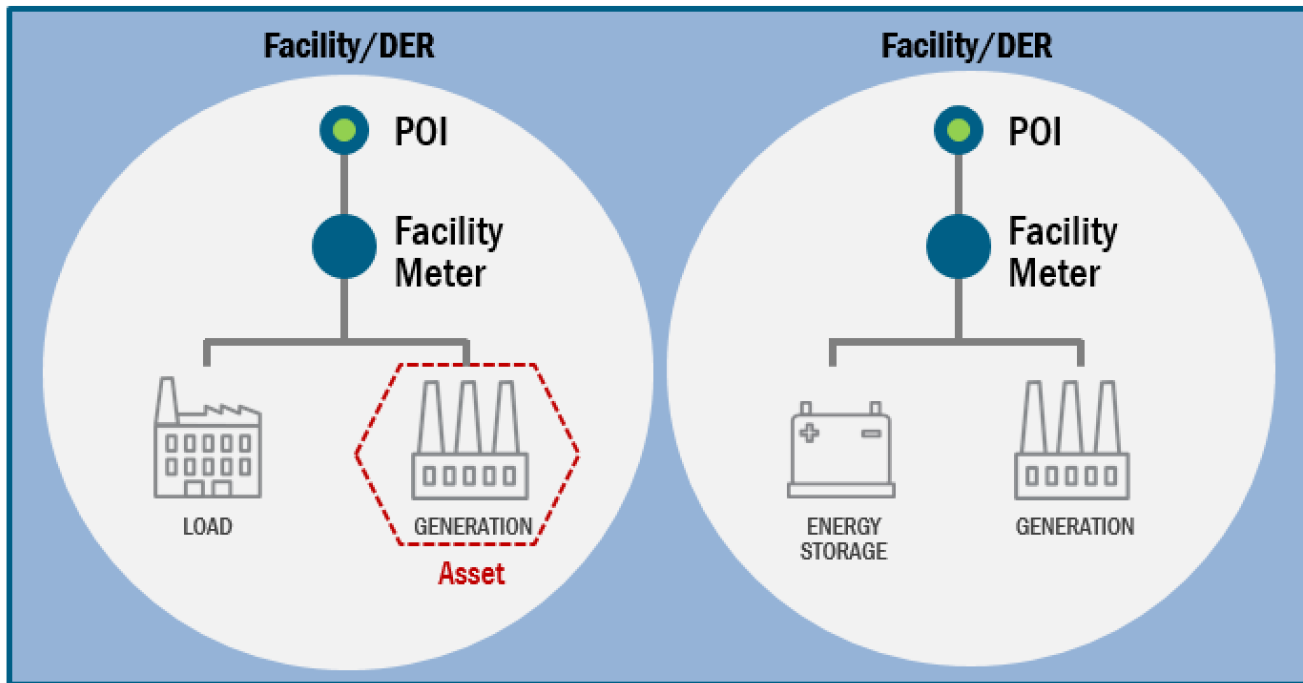
- **Aggregations will be modeled at a “Transmission Node”**
 - A Transmission Node is a bus in the NYCA at which DER may aggregate, and for which LBMPs will be calculated; an alternative to the traditional Gen Bus nodes used for central station units
- **The NYISO, in coordination with New York Transmission Owners, will establish a set of Transmission Nodes in the NYCA**
- **Aggregators will work with Transmission Owners to determine which NYISO-identified Transmission Node each individual DER/Facility electrically maps to**
 - Only DER/Facilities that map to the same Transmission Node may be aggregated together
- **Aggregators may enroll one or more Aggregations at a Transmission Node**

DER Hierarchy – Top Down



DER Hierarchy – Top Down (Cont.)

Aggregation



Dual Participation & Operations Coordination

Dual Participation

- **The NYISO's market design will allow resources that provide wholesale electricity market services to also provide services to another entity (*e.g.*, the utility or a host facility)**
 - The NYISO believes that providing resources with the flexibility to meet wholesale and distribution system needs will maximize benefits to New York electricity consumers
 - Resources participating in the wholesale electricity markets will continue to be obligated to follow all applicable NYISO market rules and utilize good utility practices
- **All Resources will be permitted to engage in dual participation**

Dual Participation Requirements

■ NYISO dual participation requirements:

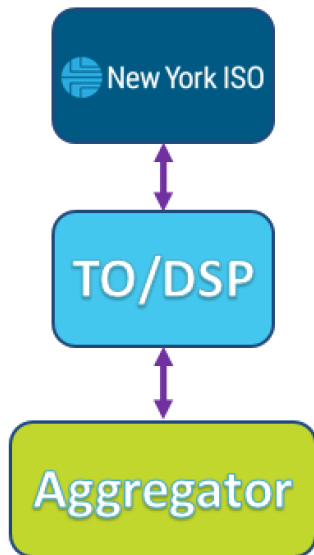
- Comply with all NYISO market rules for the services offered to the wholesale market
 - Non-compliance may result in financial penalties
- Appropriately offer into the wholesale electricity markets to reflect any non-wholesale (e.g., retail) obligations
 - Resources will be required to follow NYISO dispatch instructions at all times;
 - Resources will submit offers to NYISO when providing non-wholesale service
 - Based on resource type and market product enrollment, the offer may denote “Self” or “ISO”-Committed mode
 - Resources will receive payments for Energy or Ancillary Services scheduled through these offers

Dual Participation Obligations

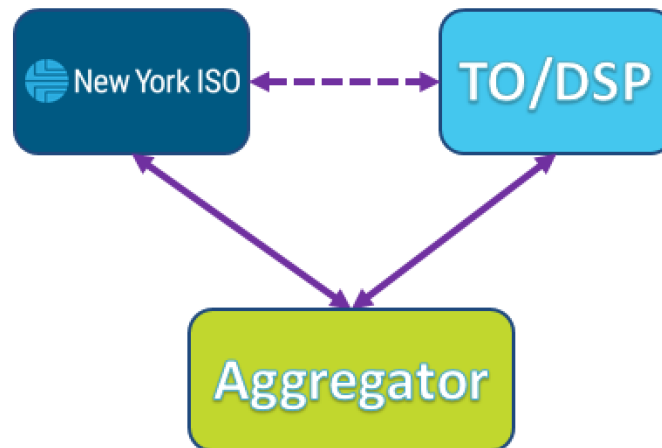
- **Outages on the Distribution system must be reflected in the Aggregator's Bids or derate**
 - As part of the Aggregator/TO communication procedures, the Aggregator will be responsible for reflecting distribution system outages in its wholesale market Bids
 - The Aggregator is responsible for updating bids or derating the Aggregation to properly represent an Aggregations ability to perform as a result of any distribution system outages

Real-time Telemetry Data Communication Paths Options

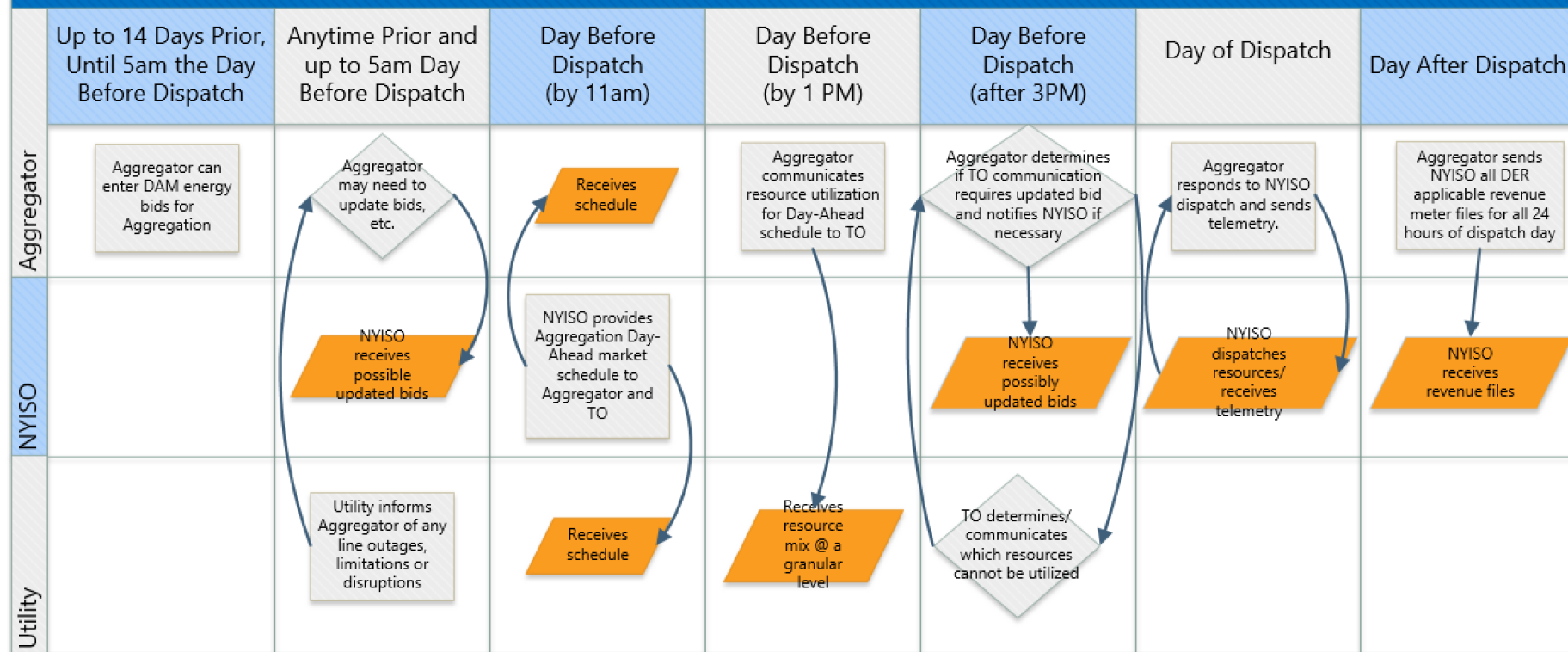
Option 1 – Aggregator communicates only with DSP and DSP provides data to/from NYISO



Option 2 – Aggregator communicates with both DSP and NYISO in parallel

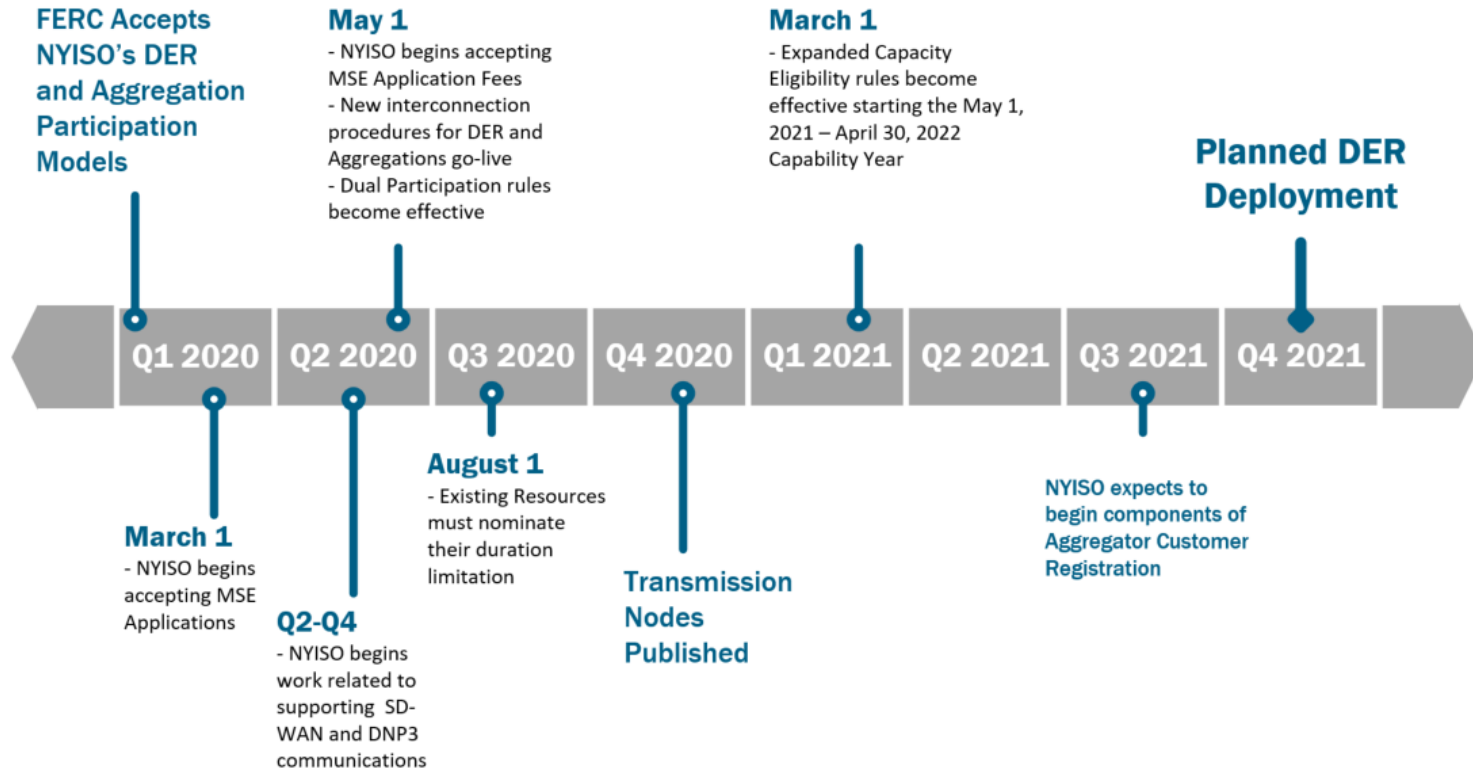


Operational Coordination for DER



Timeline

NYISO DER and Aggregation Participation Models Deployment Timeline



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

