



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

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James Pigeon

Manager, Distributed Resources Integration

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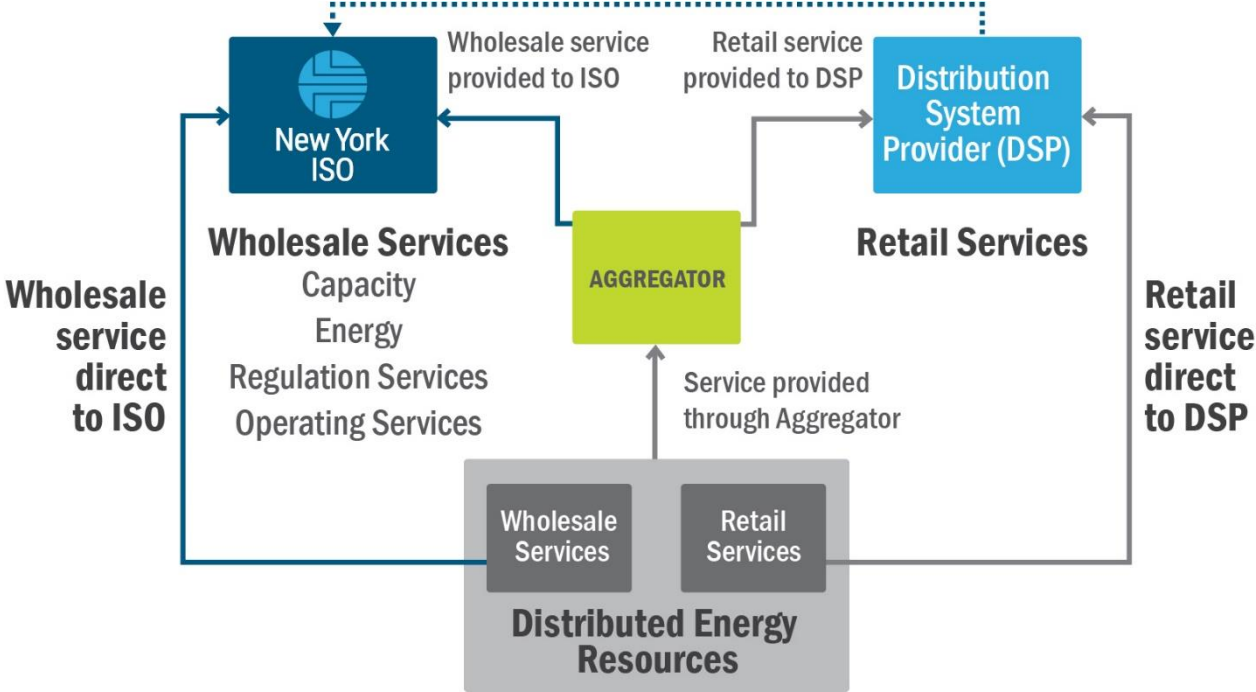
# NYISO DER Roadmap Effort

- 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

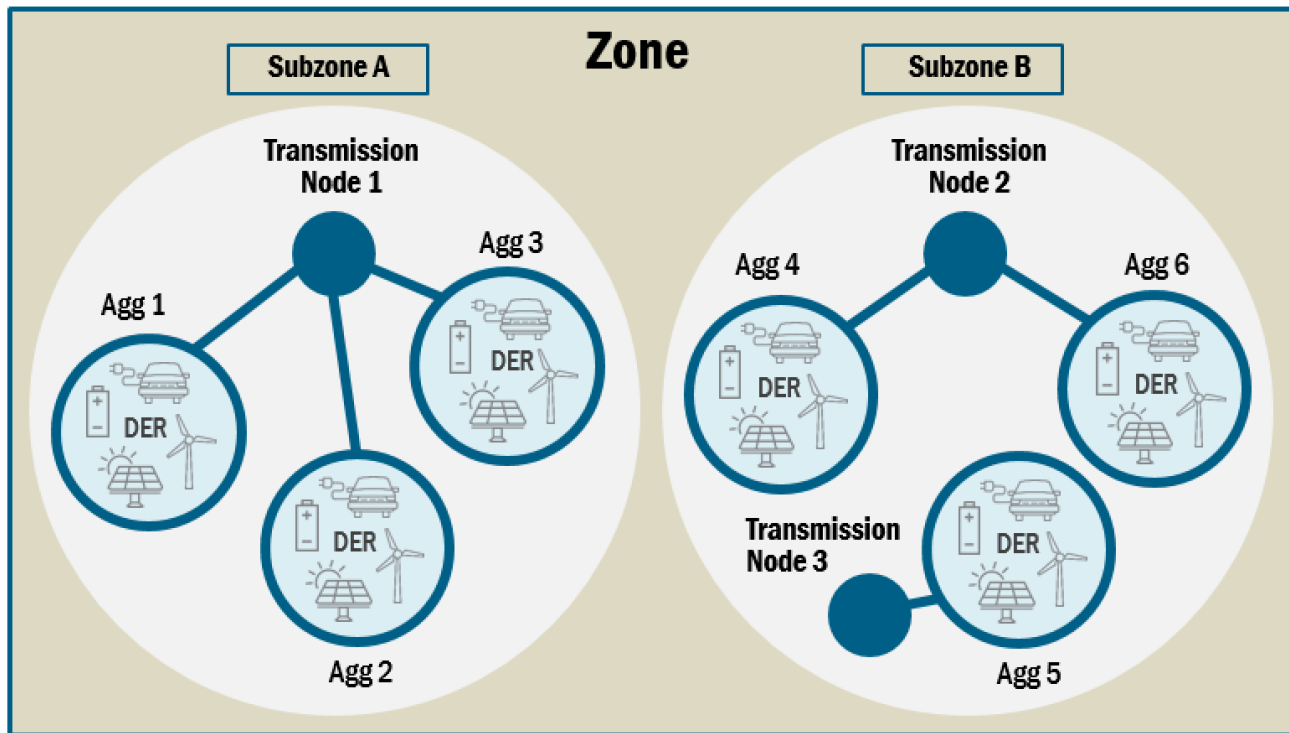
# Aggregations

- 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**

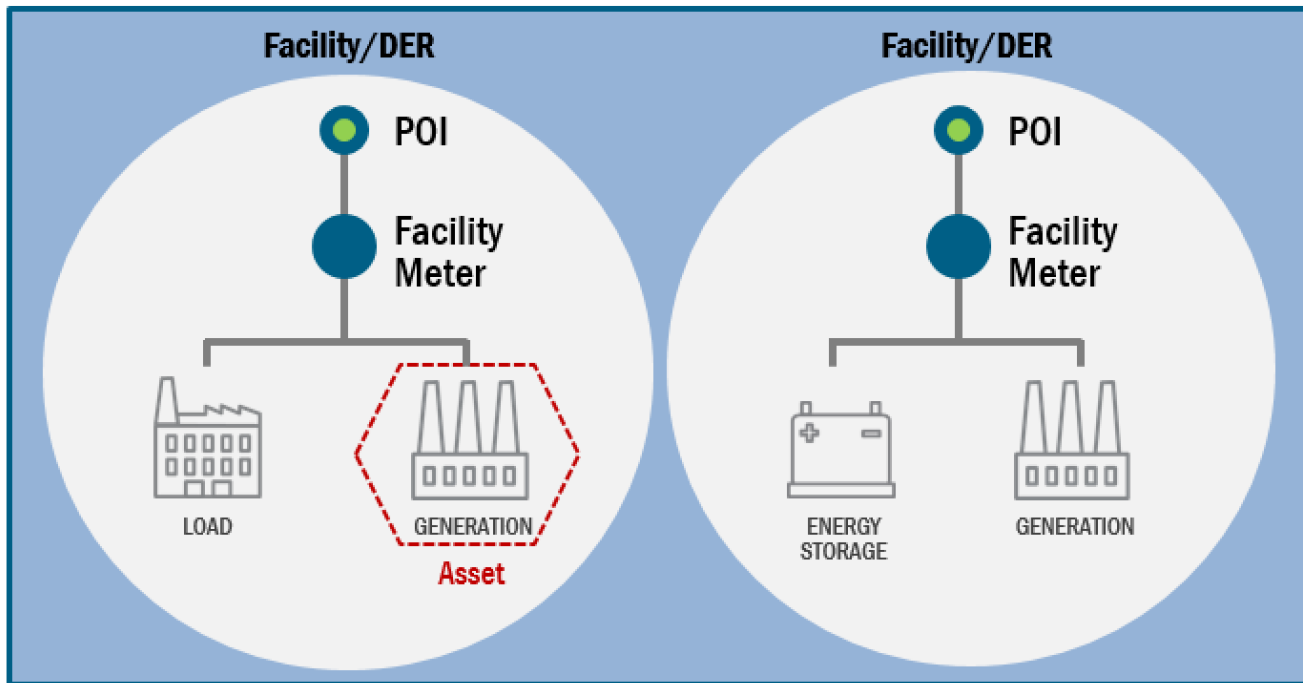
# DER Hierarchy – Top Down





# 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

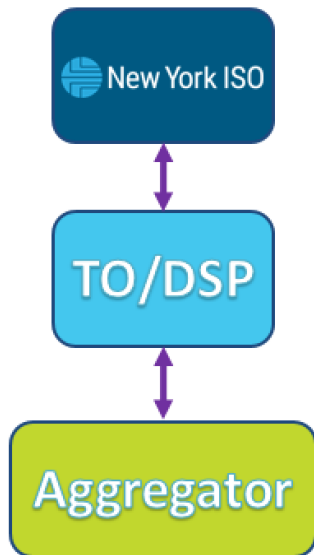
- **NYISO dual participation requirements:**
  - Comply with all NYISO market rules for the services offered to the wholesale market
    - Non-compliance may result in financial penalties
  - Appropriately offer into the wholesale electricity markets to reflect any non-wholesale (e.g., retail) obligations
    - 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

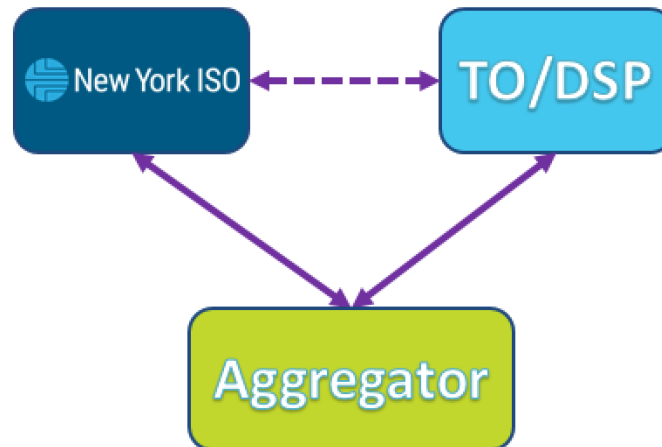
- **Outages on the Distribution system must be reflected in the Aggregator's Bids or derate**
  - As part of the Aggregator/TO communication procedures, the Aggregator will be responsible for reflecting distribution system outages in its wholesale market Bids
  - The Aggregator is responsible for updating 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

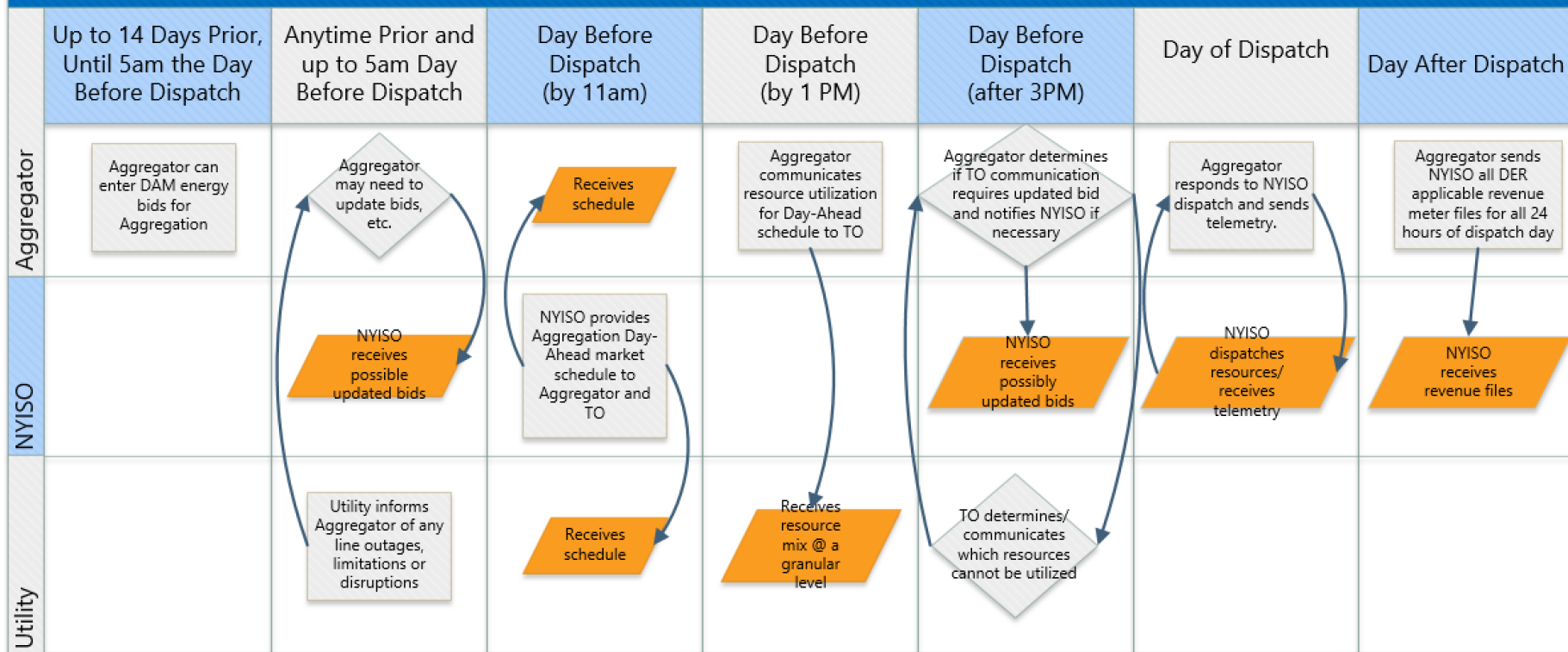
Option 1 – Aggregator communicates only with DSP and DSP provides data to/from NYISO



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



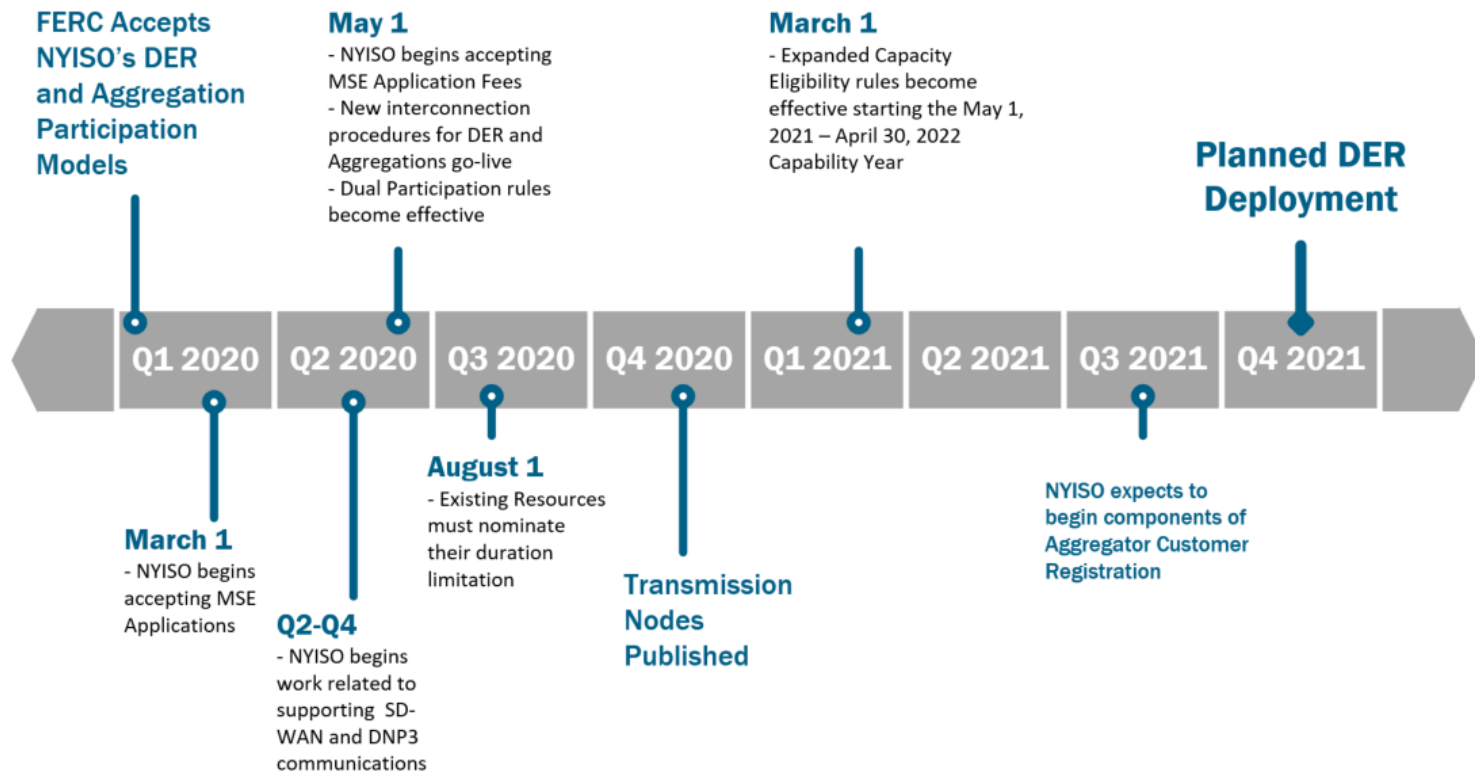
# Operational Coordination for DER



# 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

