

# DER Impacts on the Bulk Power System

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Mike DeSocio

Director, Market Design

Impacts of DERs on the Bulk Power System Training  
NARUC/NASEO/NASUC

June 22, 2021, Virtual Meeting

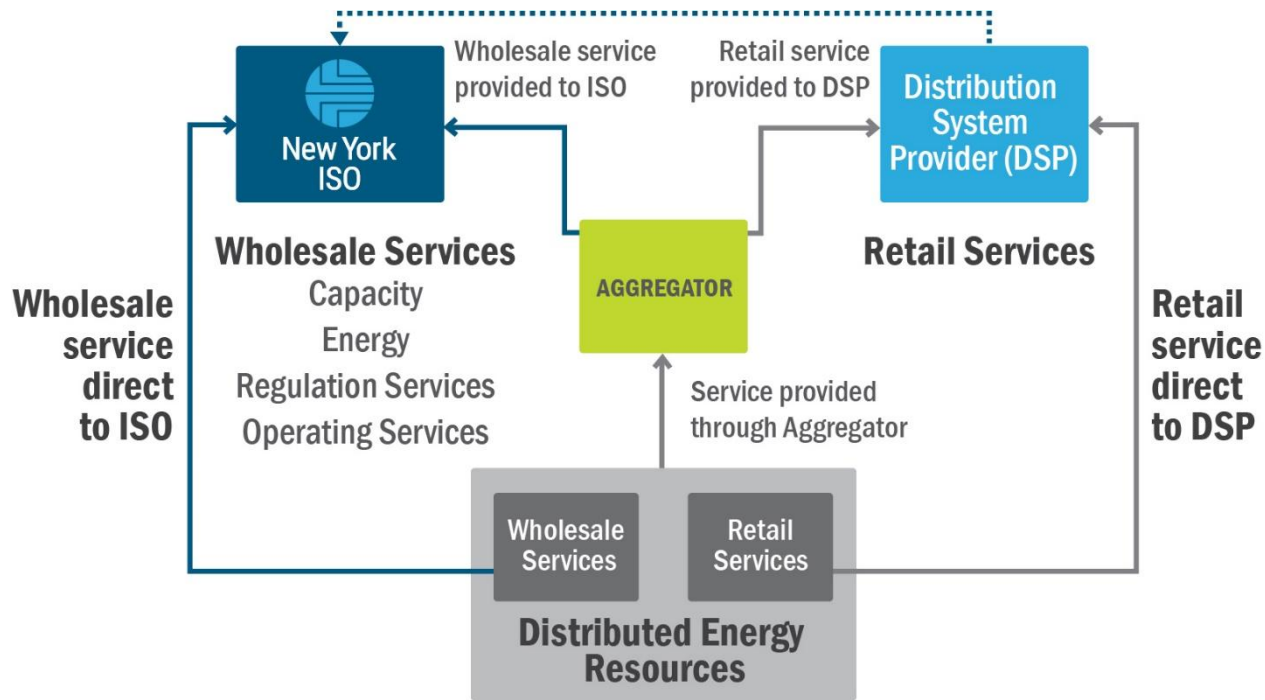
# NYISO DER Roadmap Effort

- Develop and enhance participation opportunities for DER in the NYISO-administered wholesale electricity markets by creating a DER Participation Model.
  - This effort began in the spring of 2016
- 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.

# NYISO-Administered Wholesale Electricity Markets



# Aggregations & Transmission Nodes

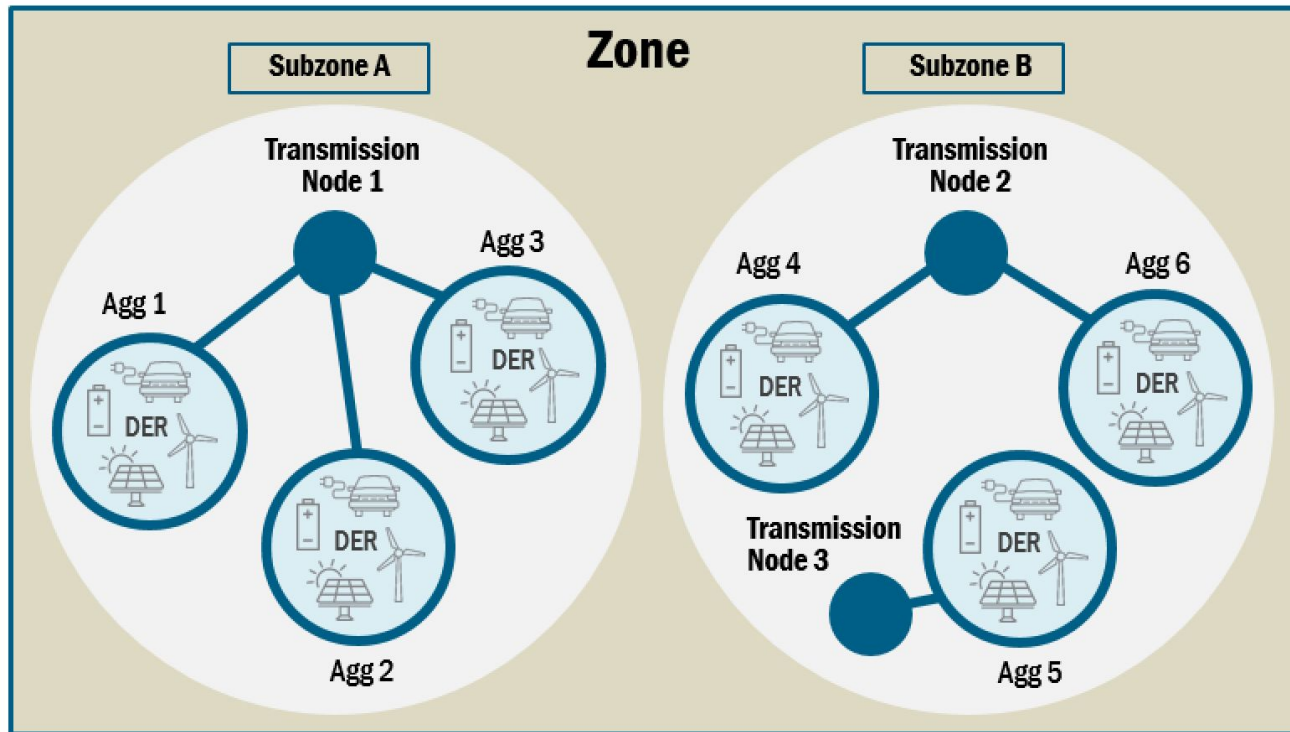
# Aggregations

- 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 (number of facilities or MW)

# 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

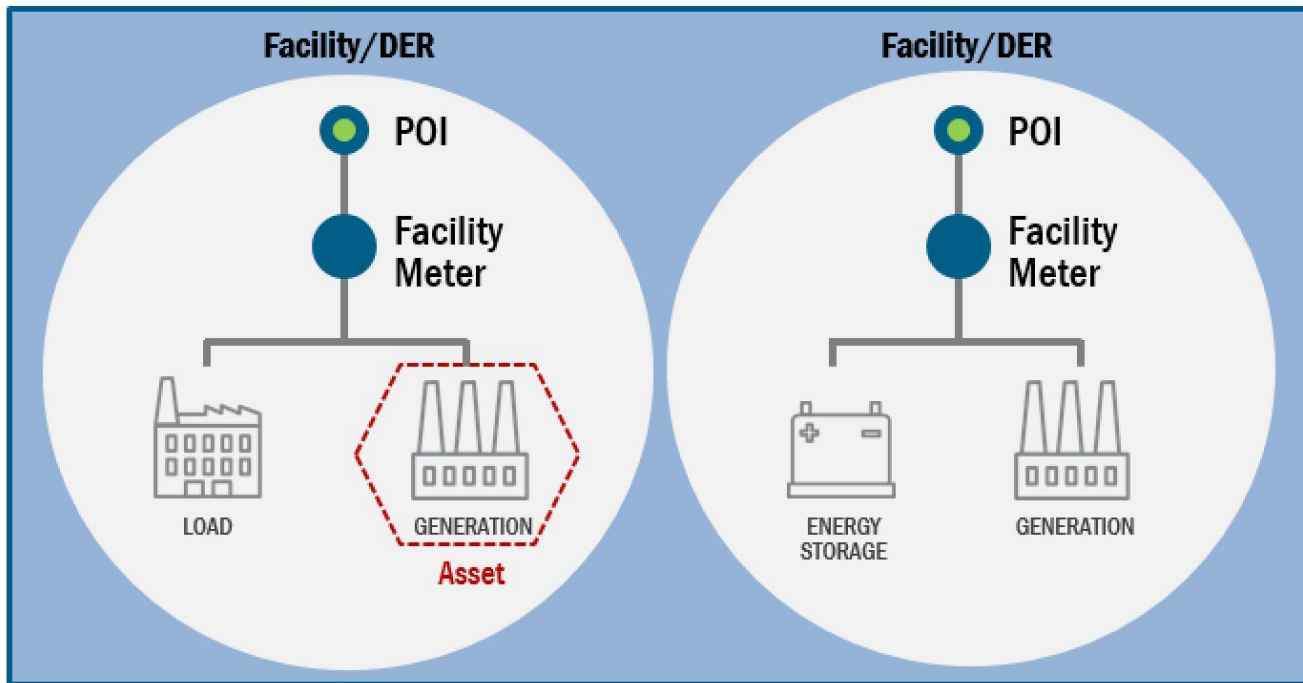
# DER Hierarchy – Top Down





# DER Hierarchy – Top Down (Cont.)

## Aggregation



# Dual Participation & Operational 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 (not just DER) will be permitted to engage in dual participation**

# Dual Participation Requirements

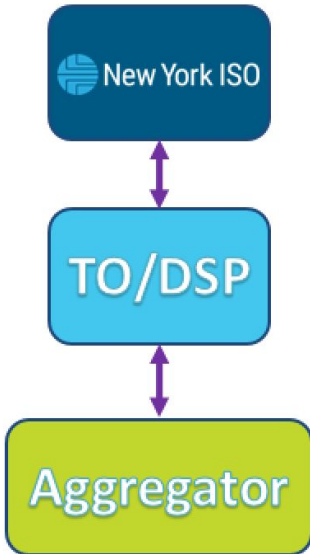
- **NYISO dual participation requirements:**
  - Comply with all NYISO market rules for the services offered to the wholesale market
    - Non-compliance may result in financial penalties
  - Appropriately offer into the wholesale electricity markets to reflect any non-wholesale (e.g., retail) obligations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

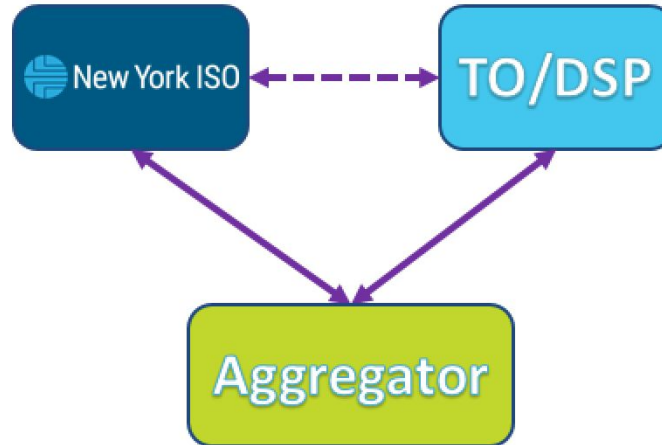
- **Outages on the Distribution system must be reflected in the Aggregator's Bids or derate**
  - As part of the Aggregator/TO communication procedures, the Aggregator will be responsible for reflecting distribution system outages in its wholesale market Bids
  - The Aggregator is responsible for updating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

## Options

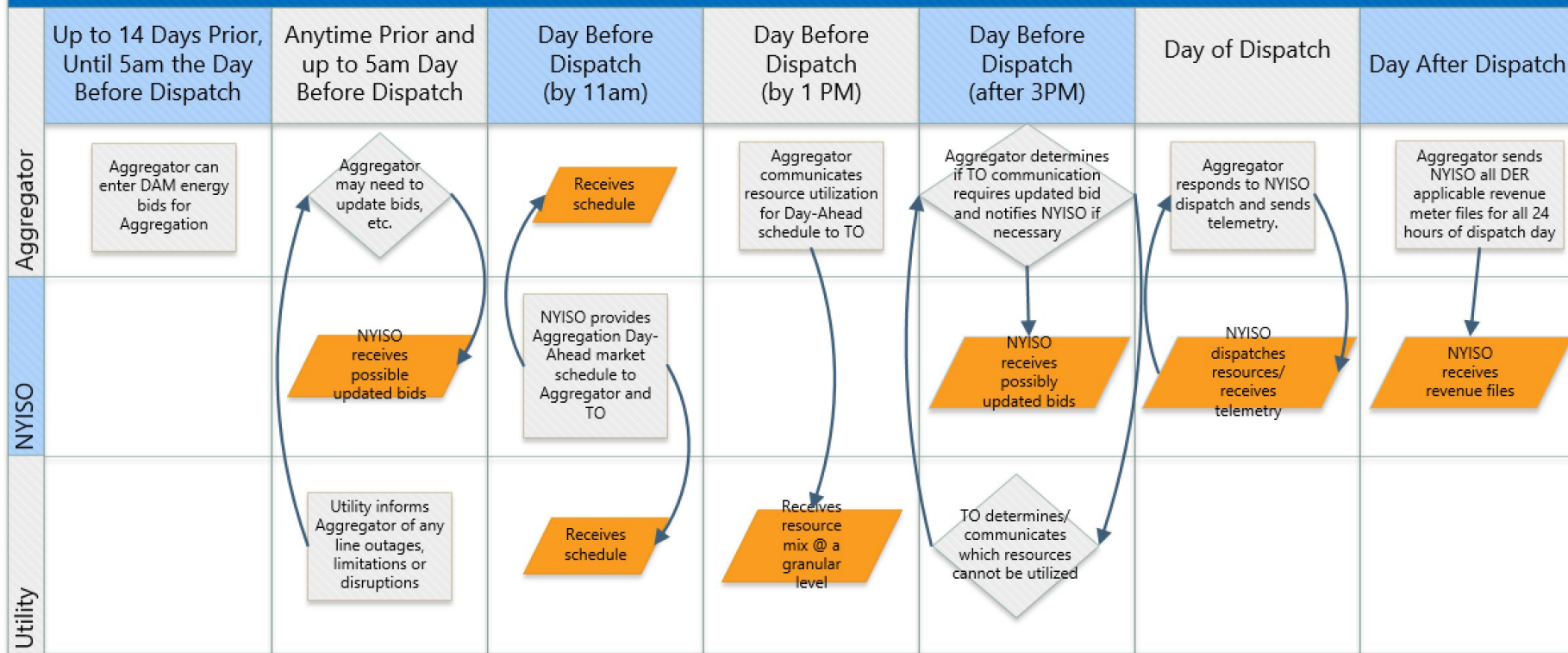
**Option 1** – Aggregator communicates only with DSP and DSP provides data to/from NYISO



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



# Operational Coordination for DER



# Appendix



# Background - DER

Date	Working Group	Discussion points and links to materials
06-19-18	Market Issues Working Group (MIWG)	<a href="#">DER Market Design: Updates</a>
07-26-18	Market Issues Working Group (MIWG)	<a href="#">DER Market Design Updates: Energy Market Bid to Bill Examples</a>
10-09-18	Market Issues Working Group (MIWG)	<a href="#">DER Market Design Update: Wholesale Obligations for Dual Participation</a>
10-10-18	Market Issues Working Group (MIWG)	<a href="#">DER Market Design Update</a>
11-05-18	Market Issues Working Group (MIWG)	<a href="#">DER Market Design Updates</a>
12-18-18	Market Issues Working Group (MIWG)	<a href="#">DER Overall Energy Market Design Review</a>
02-04-19	Market Issues Working Group (MIWG)	<a href="#">DER Overall Energy Market Design Review Part I</a>
02-06-19	Market Issues Working Group (MIWG)	<a href="#">DER Overall Energy Market Design Review Part II</a>
02-28-19	Market Issues Working Group (MIWG)	<a href="#">DER Energy Market Design Dual Participation</a>
03-18-19	Market Issues Working Group (MIWG)	<a href="#">DER Energy Market Design DR Cost Allocation</a>

# Background - Capacity

Date	Working Group	Discussion points and links to materials
03-25-19	Installed Capacity Working Group	<a href="#">Expanding Capacity Eligibility</a>
04-08-19	Installed Capacity Working Group	<a href="#">Expanding Capacity Eligibility</a>

# Background - MSE

Date	Working Group	Discussion points and links to materials
02-02-17	Posted	<a href="#"><u>Distributed Energy Resources Roadmap for New York's Wholesale Electricity Market</u></a>
05-23-17	Market Issues Working Group (MIWG)	<a href="#"><u>DER Measurement &amp; Verification, Monitoring &amp; Control, and Meter Data Study</u></a>
09-29-17	Market Issues Working Group (MIWG)	<a href="#"><u>DER Meter Data Study</u></a>
10-30-17	Market Issues Working Group (MIWG)	<a href="#"><u>DER Meter Data Study Initial Findings</u></a> - E-Cubed Policy Associates, LLC (Dr. Paul Sotkiewicz)
12-13-17	Market Issues Working Group (MIWG)	<a href="#"><u>NYISO Meter Data Study Report</u></a> - E-Cubed Policy Associates, LLC (Dr. Paul Sotkiewicz)
09-11-18	Market Issues Working Group (MIWG)	<a href="#"><u>DER Meter Service Constructs for NYISO Market Participation</u></a>
10-23-18	Market Issues Working Group (MIWG)	<a href="#"><u>Conceptual Details of MSEs Participation in NYISO Markets</u></a>
11-30-18	Market Issues Working Group (MIWG)	<a href="#"><u>Meter Services Entity Design Updates</u></a>
02-15-19	Market Issues Working Group (MIWG)	<a href="#"><u>Metering, LBMP Calculation, and Creditworthiness Tariff Amendments for DER</u></a>
04-05-19	Market Issues Working Group	<a href="#"><u>Metering and MSE Cost Recovery Tariff Amendments</u></a>

# 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

