

Distributed Energy Resources

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Purpose of this Presentation

- Define a Distributed Energy Resource (DER) facility and a DER Aggregation
- Review initial modeling principles for DER Aggregation market participation models (i.e., DER Aggregations and Single Resource Type Aggregations)

Facility Definition

- **An individual facility eligible to participate as a DER will be a facility that is either:**
 - (i) a single facility at a distinct physical location (e.g., street address and utility account number), or
 - (ii) a single physical location with (a) more than one facility with separate utility account numbers and/or points of interconnection with the distribution system, and (b) operated independently from other facilities at that physical location
 - For example, an apartment building where the entire building is commonly metered and has a single utility account for all of the apartments would likely be considered one “individual facility”
 - On the other hand, a commercial building where each unit is separately owned, operated, and metered may qualify to be multiple “individual facilities”
 - Maximum Injection Limit of 20 MW
 - Minimum Capability of 10 kW (proposed by NYISO, pending FERC acceptance)

DER Facility

- **A DER may be one of the following categories of facilities electrically located in NYCA:**
 - A facility comprising two or more different technology types located behind a single point of interconnection with a maximum Injection Limit of 20 MW
 - A Demand Side Resource
 - A generator with a maximum Injection Limit of 20 MW

Aggregations

- **An aggregation in the DER participation model may be one of the following categories of facilities electrically located in NYCA:**
 - DER Aggregation: Consisting of only Demand Side Resources (DSRs)
 - Aggregation must consist of 1 or more DSR DER
 - No DER in the aggregation can inject into the grid, load reduction only
 - DER Aggregation: Mix of Generators, Energy Storage Resources (ESRs), and DSRs
 - Aggregation must consist of 2 or more Resource Types (i.e., Generator, ESR, DSR)
 - Capable of injection and/or load reduction
 - Single Resource Type Aggregation: Consisting of one type of Resource (i.e., Generator, ESR, Intermittent Power Resource (IPR))
 - Does not include DSR
 - Capable of injection and/or withdrawal
- **Aggregations are grouped at a Transmission Node**
 - An Aggregation will be assigned to a Transmission Node in the Load Zone to which it is electrically connected.

Summary of Proposed Modeling Principles

- **Modeling Principle 1: Combine DSR-Only Aggregations by zone, model similar to the enhanced Special Case Resources (SCRs) modeling but outside of the Emergency Operating Procedure (EOP).**
 - Modeled in GE MARS as 'EL3' resource type
- **Modeling Principle 2: Combine single resource type aggregations without energy duration limitations by zone and technology type**
- **Modeling Principle 3: Combine single resource type aggregations with energy duration limitations into one unit by zone, technology type and duration limitation**
 - Modeled in GE MARS as 'EL3' resource type, except for aggregations of ESRs which would be modeled in GE MARS using the existing energy storage (ES) resource type
- **The NYISO is continuing to assess potential modeling treatment for DER Aggregations of mixed generation types without any ESRs and plans to further discuss at a future ICS meeting**

Proposed Modeling Principle 1:

For DER “DSR Only Aggregations”

- **Model DSR only aggregations similar to how SCRs are modeled but outside of the EOP**
 - Currently, DSRs participating in the SCR program are modeled as “EL3”
 - Keep the same modeling technique but model as a resource outside of the EOP
- **Example: A DER Aggregation consisting of only DSRs would be modeled using the enhanced Energy Limited Resource (ELR) functionality with capacity and daily energy limitations, as well as hourly response rate if inputs are available**

Proposed Modeling Principle 2:

For “Single Resource Type Aggregations”

■ Intermittent Power Resources

- Combine each aggregation by zone and technology type
 - Solar generation,
 - Wind generation, or
 - Landfill gas (LFG) plants
- Example: all wind Aggregations located in Load Zone A, would be modeled as a single wind unit in Load Zone A

■ Thermal Generators

- Combine generator Aggregations without energy duration limitations by zone as a single unit
- Example 1: all generator Aggregations, located in Load Zone A, with no duration limitations, would be modeled as a single generator in Load Zone A

Proposed Modeling Principle 3:

For “Single Resource Type Aggregations”

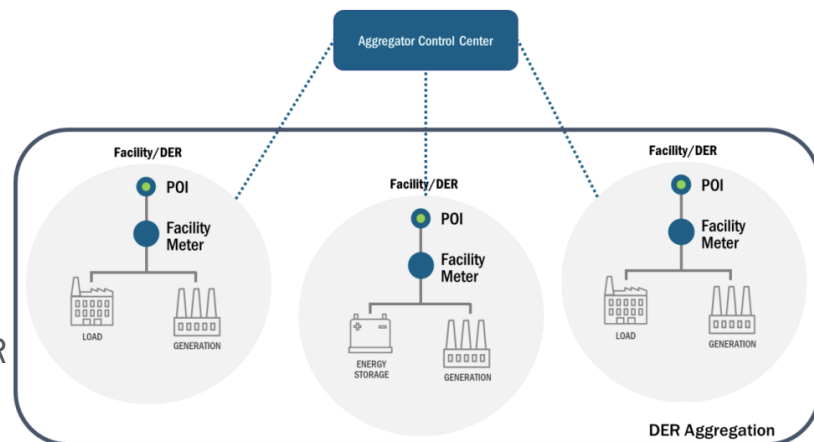
■ Energy Storage Resources

- Model each ESR aggregation by zone and duration limitation
- Example: all ESRs participating in ESR Aggregations located in Load Zone A and subject to a 4-hour duration limit would be modeled as a single ESR with duration limit of 4 hours in Load Zone A

Proposed Modeling Principle 3:

For DER “Mixed Generation Aggregations”

- **DER Aggregation: mixed generation types including one or more ESR, model as an ELR**
 - Example: A wind facility and an energy storage facility that are metered separately could be seen as two separate resources, but combined into an aggregation, the wind dispatching and ESR charging will net, leaving the battery available to potentially dispatch during peak hours like an ELR
- **DER Aggregation: mixed generation types without any ESRs**
 - The NYISO is continuing to assess potential modeling treatment for such DER Aggregations and plans to further discuss at a future ICS meeting



An Aggregation that includes more than one Resource type (heterogenous) or only Demand Side Resources is a “DER Aggregation.”

Timeline and Deliverables

Milestone	Date
Present Scope to ICS	01/30/2024
Initial research on DER Characteristics and Expected Market Behavior	02/27/2024
Discussion on Modeling Considerations	04/03/2024
Further Discussion on Modeling Considerations and Recommendations	April/May 2024
Conclusion and Recommendation for NYSRC Approval	May/June 2024

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