New York ISO
Independent System Operator

Distributed Energy Resources

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ICS Meeting #287

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Background

- The NYISO has developed a new market participation model for Distributed Energy Resources (DER) to participate in the NYISO-administered markets (including the ICAP market). Certain aspects of the proposed participation model remain pending before FERC
- Under the proposed model, various resource types (and aggregations thereof) can participate in the NYISO-administered markets and will be required to follow the NYISO's dispatch instructions
- While there are existing approaches to model different types of ICAP suppliers, certain resource types have never been modeled in the IRM study
  - For example, aggregated resources with different fuel types and dispatchable demand response resources (i.e., different resource type than the existing Special Case Resources) have not been modeled previously in the IRM study
- As indicated in the filing submitted in FERC Docket No. ER23-2040 on February 13, 2024, subject to approval from FERC, the NYISO seeks to implement the DER participation model in April 2024.

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Whitepaper Objective

- **The objective of this whitepaper is to develop, based on comprehensive background research, a set of general guidelines and principles for modeling DER in the installed reserve margin (IRM) study prior to market entry**
- **This whitepaper will aim to answer the following questions:**
  - What are the operating characteristics of DER?
    - This will include the definition of DER, technology types, potential location, and other qualifying characteristics.
  - How are DER expected to participate in the ICAP market?
  - Should specific modeling approaches be considered for DERs in the IRM study, based on their characteristics and their expected market behavior?

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Agenda

- **Information about DER**
  - DER Definition
  - Facility Definition
  - Technology Types
  - Participation in the NYISO-Administered Markets
  - Possible Transition of Existing Resources to DER
- **Modeling Considerations**

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DER Definition

- **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

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Facility Definition

- **An individual facility 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)

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Technology Types

- **Refers to any of the following categories of facilities:**
  - Demand Side Resources,
  - Generators,
  - Energy Storage Resources,
  - Solar generation,
  - Wind generation, or
  - Landfill Gas plants.
- **Individual DER may also be eligible for certain classifications that otherwise apply to standalone Resources in the NYISO administered markets including Energy Limited Resource, Capacity Limited Resource, or Limited Energy Storage Resource.**

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Participation in the NYISO-administered Markets

- There are many ways a resource can participate as DER

<table>
<tr><td rowspan="4">Aggregations of DER

An aggregation under the responsibility of an aggregator and consists of recourses:

• Can qualify to participate in the Energy, Ancillary and Capacity market
• Capable of responding in real-time to NYISO’s direction</td><td>Generator Resource Model</td><td>Consisting of Only Generators
• Aggregation must consist of 2 or more Generator DER</td></tr>
<tr><td>Energy Storage Resource Model</td><td>Consisting of Only Energy Storage Resources (ESR)
• Aggregation must consist of 2 or more ESR DER</td></tr>
<tr><td rowspan="2">Dispatchable DER Model</td><td>Consisting of Only Demand Side Resources (DSR)
• Aggregation must consist of 1 or more DSR DER
• No DER in the aggregation can inject into the grid, load reduction only</td></tr>
<tr><td>Mix of Generators, Energy Storage Resources, and Demand Side Resources
• Aggregation must consist of 2 or more Resource Types (i.e., Generator, ESR, DSR)
• Capable of injection and/or load reduction</td></tr>
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Possibilities of Demand Side Resources Transitioning to DER

- **NYISO's existing economic-based demand response programs will ultimately be replaced by the new Aggregation participation model**
  - The NYISO currently anticipates that the Day-Ahead Demand Response Program (DADRP) and Demand Side Ancillary Services Program (DSASP) will be sunset approximately 12 months after initial implementation of the DER participation model
- **NYISO's existing reliability-based programs (i.e., Emergency Demand Response Program (EDRP) and Special Case Resources (SCR) program) will remain available**
- **Demand Side Resources (DSR) that are dispatchable in real-time may elect to provide Energy, Ancillary Services, and capacity through a DER Aggregation**

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Considerations

- **Should specific modeling approaches be considered for DER in the IRM study, based on their characteristics and their expected market behavior?**
  - Individual Modeling – model facilities that make up a DER Aggregation as individually dispatchable resources using existing resource types (e.g., generator resources, energy storage resources, etc.)
    - Complex due to the number of individual resources
  - Simplified approach - modeling Aggregations (i.e., not individual facilities) and potentially leveraging existing resource model types, such as:
    - Using the normal Energy Limited Resource (ELR) functionality with capacity and daily energy limitations
    - Using the enhanced ELR functionality with capacity and daily energy limitations, as well as hourly response rate if inputs are available (similar to the enhanced SCR modeling but outside of emergency operating procedure [EOP] steps)

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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	March/April 2024
Discussion and Conclusion on Modeling Considerations	April/May 2024
Conclusion and Recommendation for NYSRC Approval	May/June 2024

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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

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