

NYISO DER 2022 – Overview & Strategy

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Agenda

- **Background**
- **Review of FERC-accepted DER Market Design**
- **Review of FERC Order 2222 – Impacts to Scope**
- **NYISO 2022 DER Implementation Strategy**
- **Next Steps**

Background – DER Market Design

Date	Working Group/Event	Materials
06-19-18	Market Issues Working Group (MIWG)	<u>DER Market Design: Updates</u>
07-26-18	Market Issues Working Group (MIWG)	<u>DER Market Design Updates: Energy Market Bid to Bill Examples</u>
10-09-18	Market Issues Working Group (MIWG)	<u>DER Market Design Update: Wholesale Obligations for Dual Participation</u>
10-10-18	Market Issues Working Group (MIWG)	<u>DER Market Design Update</u>
11-05-18	Market Issues Working Group (MIWG)	<u>DER Market Design Updates</u>
12-18-18	Market Issues Working Group (MIWG)	<u>DER Overall Energy Market Design Review</u>
02-04-19	Market Issues Working Group (MIWG)	<u>DER Overall Energy Market Design Review Part I</u>
02-06-19	Market Issues Working Group (MIWG)	<u>DER Overall Energy Market Design Review Part II</u>
02-28-19	Market Issues Working Group (MIWG)	<u>DER Energy Market Design Dual Participation</u>
03-18-19	Market Issues Working Group (MIWG)	<u>DER Energy Market Design DR Cost Allocation</u>
03-28-19	Market Issues Working Group (MIWG)	<u>DER Energy Market Design: Settlements & Other Updates</u>
04-17-19	Business Issues Committee (BIC)	<u>DER Energy & Capacity Market Design</u>
04-24-19	Management Committee (MC)	<u>DER Energy & Capacity Market Design</u>



Background – DER: 2020 - Present

Date	Working Group/Event
06-27-19	Proposed Tariff Revisions Regarding Establishment of Participation Model for Aggregations of Resources, Including Distributed Energy Resources (original filing)
08-23-19	FERC Deficiency Letter
09-04-19	NYISO Letter informing the Commission that it would not be able to implement the Meter Services Entity rules on November 1, 2019, unless an Order accepting the MSE rules was issued by September 11, 2019.
09-18-19	NYISO Response to August 23, 2019, Deficiency Letter
10-30-19	FERC Deficiency Letter
11-26-19	NYISO Response to October 30, 2019, Deficiency Letter
01-23-20	FERC Order Accepting DER Tariff Revisions and Directing Compliance Filing and Informational Report
02-24-20	NYISO Filing in Compliance with January 23, 2020, Order
04-21-20	Letter Order accepting NYISO's February 24, 2020, Compliance Filing
09-17-20	FERC issues Order No. 2222
07-19-21	NYISO Compliance Filing for Order No. 2222
09-14-21	NYISO submitted answers to Comments and Protests to its compliance filing
10-01-21	FERC issued a request for more data (with 30 days to respond)
10-05-21	NYISO filed a request of 20 days (new due date of November 19) to respond to the request for more data
11-19-21	NYISO filed a response to FERC request for additional information for Order No. 2222

Review of FERC- accepted DER Market Design

NYISO FERC-accepted 2020 DER Market Design

- **The following slides review the NYISO's DER market design accepted by the Commission in 2020.**
 - These market design concepts reflect the consensus that NYISO and stakeholders worked to achieve throughout the years prior to the 2019 filing.
- **The purpose of providing this review is to highlight the substance of the NYISO's approved market design, targeted for implementation Q4 2022.**
 - NYISO will provide a description of planned manual language scope updates based on the content of the approved market design.
- **After this review, the presentation will identify areas that are impacted by the open Order No. 2222 compliance proceeding.**
- **Please note: The content on the slides throughout this section was approved by BIC, MC, and ultimately by the Commission.**
 - Changes or modifications will extend the currently planned implementation of Q4 2022.

DER Definition

- **Distributed Energy Resource (“DER”): (i) a facility comprising two or more different technology types located behind a single point of interconnection with a maximum Injection Limit of 20 MW, (ii) a Demand Side Resource, or (iii) a Generator with a maximum Injection Limit of 20 MW.**

Aggregations & DER

- **The DER participation model will only be available to Aggregations.**
- **Individual DER facilities will participate in an Aggregation under the market rules for either:**
 - A DER Aggregation (multiple Resource types in the Aggregation OR Demand Response)
 - An Aggregation may also be comprised of a single Demand Side Resource.
 - The specific Resource type (when there is a single Resource type in the Aggregation)
 - For an Aggregation of Intermittent Power Resources, the technology type of each Resource in the Aggregation must be the same (E.g., Resources depending on wind as their fuel)

Aggregations & Transmission Nodes

- **The ISO, in coordination with the Transmission Owners, is developing the set of Transmission Nodes in the New York Control Area.**
 - All Transmission Nodes will be identified in ISO Procedures
- **Aggregators may enroll one or more Aggregations at a Transmission Node.**
- **The NYISO will return to discuss Transmission Nodes in February 2022.**

For more information, please refer to the NYISO's December 14th, 2021, update on Transmission Nodes in the following presentation: <https://www.nyiso.com/documents/20142/26734185/Ongoing%20TSO-DSO%20Coordination%20Update.pdf/1bf5214e-24d4-6040-9d58-6e7542ff0633>

Basics for all Types of Aggregations

- **The Aggregator will be the NYISO Market Participant.**
- **DER will be permitted to aggregate to meet minimum requirements (100 kW) and performance obligations for eligible participation models.**
- **An Aggregation will be a group of one or more DER participating in the NYISO Market.**
 - Bids will represent the offer of the Aggregation
 - Performance will be measured in aggregate
 - Financial settlements will be in aggregate
 - NYISO intends to separately process the injection, withdrawal and load reduction data to ensure accurate settlements
- **Eligibility to provide services in the NYISO-administered markets will be dependent upon the operating and other characteristics of the Aggregation.**
- **Aggregations must be capable of responding in real-time to NYISO dispatch instructions.**

DER/Aggregation Enrollment

- **Aggregator will be required to enroll each DER's parameters/unique operating characteristics.**
 - Matrix of required information for cumulative Aggregation values will be dependent on the characteristics of each DER
 - An Aggregator may enroll any number of Aggregations at a transmission node

DER Bidding Approach

- All DER Aggregations, regardless of resource mix, will be offered into the marketplace and settled as a single entity.
- The points in the Aggregation's offers may reflect the entire operating range of the Aggregation for that interval.
 - Example: Aggregation contains three 1MW small generators and one ESR with a -2MW to +2MW range
 - Aggregation operating range reflected in the offer could be -2 to +5 MW

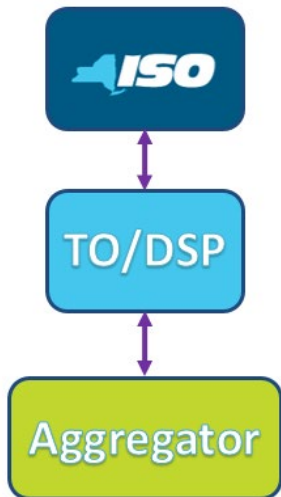
Energy Balancing with Generation

- **Aggregators will be allowed to balance individual DER response within the Aggregation to achieve Aggregation dispatch.**
- **Example:**
 - Aggregation contains one 5 MW ESR and one 4 MW generator
 - Aggregation bids in and is scheduled to charge 1 MW
 - The ESR charges at 5 MW while running its generator at 4 MW
 - Aggregation response = -5 MW of ESR + 4 MW of injection = - 1 MW
 - The Aggregation would be invoiced for 1 MW of Energy withdrawals from the wholesale market

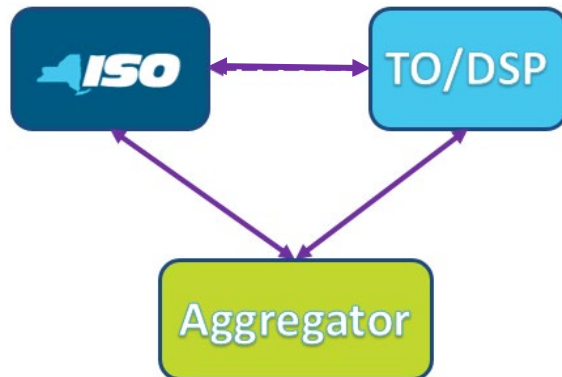
Options for Real-time Telemetry Data Communication

Paths

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



Dual Participation

- **The NYISO allows resources that provide Wholesale Market services to also provide services to another entity (e.g., the utility).**
 - Resources participating in the wholesale markets are obligated to follow all applicable NYISO market rules and utilize good utility practices
- **Dual participation applies to all resources, not just Aggregations.**

Aggregations – Obligations

■ Obligations of Aggregations.

- Bid/Schedule/Notify obligations will be based on the characteristics of the Aggregation
- The NYISO will require the DER to perform a DMNC test once every Capability Period for the Aggregation as a whole
- The method for calculating the derating factor for a DER will be based on the characteristics of the DER by treating the DER as a single resource
 - Derating factors for DER will be measured on the availability or performance of the Aggregation as a whole, as appropriate for that participation model

Aggregations – Resources Changing Aggregations

- **Resources that switch Aggregations but remain within the same participation model can switch on a monthly basis.**
 - Existing resources will carry their previous DMNC with them
- **Resources that switch between participation models or wholesale/retail participation must do so at the beginning of the Capability Year.**
 - Existing wholesale market participants must notify the NYISO of this change prior to August 1st of the year preceding the Capability Year
 - Resources that switch between participation models will carry their previous DMNC with them

Time Stacking – Qualifications

- **Time Stacking - the ability to stack/sequentially align DER to meet minimum duration requirements for capacity payments.**
 - Individual DER must be separately enrolled and must be able to run for a minimum of 1 hour per day to participate in time stacking
 - Individual DER will only be allowed to participate in hour increments and be truncated down to the hour duration before time stacking
 - A time stacked DER will be rated for the amount of Energy it can sustain over the run time requirement
 - This can be the Capacity Supplier requirement or any Capacity Supplier with duration limitations requirement
 - DER participating in the homogeneous intermittent model cannot time stack

Interconnection for DER

- **The Interconnection process for DER will focus on the facility (not the asset or Aggregation).**
 - A multi-technology DER facility may submit one Interconnection Request (“IR”) and will be evaluated pursuant to the Small Generator Interconnection Procedures
- **NYISO redefined what may be included in one IR (i.e., a single queue position in the interconnection queue).**
 - Revisions to both the Material Modifications and Permissible Modifications sections to account for DER
 - Material Modifications (requiring a new Interconnection Request)
 - Permissible Modifications (not material, but may require IA amendments)

Review of FERC Order 2222 – Impacts to Scope

NYISO Compliance

- **The NYISO has identified FERC Order No. 2222 directives that necessitate updates to the previously approved NYISO DER market design.**
 - Double counting of services
 - Utility review process
 - Small LSE opt-in
 - Aggregation of one
 - Operational coordination procedures
 - Interconnection
- **On the following slides, specific directives will be discussed – please note that the NYISO, in an effort to ensure DER implementation in Q4 of 2022, will likely delay work on any requirement introduced by Order 2222 that is not within *or a minor* addition to the scope of the FERC-accepted 2020 DER market design.**
 - Manual updates and procedural work to incorporate said requirements will not be prioritized until the accepted market design has progressed

Double Counting of Services

- **FERC Order No. 2222 Paragraphs 159 - 164:**
 - “It is appropriate for RTOs/ISOs to place narrowly designed restrictions on the RTO/ISO market participation of DER through aggregations, if necessary, to prevent double counting of services”
- **NYISO plans to effectuate this requirement via an Aggregator self-attestation that its DER are not providing the same service(s) in a retail market and/or program.**
- **NYISO is collaborating with the Joint Utilities to develop a services compatibility document identifying retail market services that conflict with wholesale market services to prevent double counting.**

Utility Review

- **FERC Order No. 2222 Paragraphs 292 - 299:**
 - “...each RTO/ISO must coordinate with distribution utilities to develop a distribution utility review process that includes criteria by which the distribution utilities would determine whether (1) each proposed distributed energy resource is capable of participation in a distributed energy resource aggregation; and (2) the participation of each proposed distributed energy resource in a distributed energy resource aggregation will not pose significant risks to the reliable and safe operation of the distribution system.”

Utility Review

- The NYISO will incorporate the findings of the Distribution Utility in its own review of each DER & Aggregation per proposed Services Tariff section 4.1.10.7.1.
- It is possible, and likely, that each DU will use different criteria to assess system impact, safety, and reliability.
- The DU is responsible for providing notice of its review results by the end of the allotted 60-day review period, including an explanation of the reason for its determination.
- The Aggregator will have access to view DU review results in NYISO's system.
- The NYISO plans to work collaboratively with the Aggregator, based on the recommendations or concerns expressed by the applicable Distribution Utility, to either modify the participation characteristics of an Aggregation, or require the Aggregator to submit a revised Aggregation for review to address the concerns if modifications are not feasible in the short-term.

Small LSE Opt – In

- **FERC Order No. 2222 Paragraph 64:**
 - “Specifically, we determine that customers of utilities that distributed 4 million MWh or less in the previous fiscal year may not participate in distributed energy resource aggregations unless the relevant electric retail regulatory authority affirmatively allows such customers to participate in distributed energy resource aggregations.”
- **NYISO will include as part of the enrollment parameters for each DER an attestation attribute, requiring the applicable Aggregator to certify that the LSE (DU) either:**
 - Distributed more than 4 million MWh in the previous Capability year and is thus automatically Opted-in
 - Distributed fewer than 4 million MWh in the previous Capability year, but has Opted-in to the DER program

Aggregation of One

- **FERC Order No. 2222 Paragraphs: 185, 186**
 - “Each RTO/ISO [must] revise its tariff to allow a single qualifying distributed energy resource to avail itself of the proposed distributed energy resource aggregation rules by serving as its own distributed energy resource aggregator”
- **NYISO will comply with the Commission’s directive by enabling a single DER to enroll as an Aggregation in the wholesale market.**
- **This requires revisions to planned software development and has yet to be documented in NYISO procedures.**

Interconnection

- **FERC Order No. 2222 Paragraphs 90-104**
 - The Commission declined “to exercise jurisdiction over the interconnections of distributed energy resources to distribution facilities for those distributed energy resources that seek to participate in RTO/ISO markets exclusively as part of a distributed energy resource aggregation”
 - Therefore, the interconnection of a DER for the exclusive purpose of participating in a DER aggregation will not constitute a “first interconnection” under the “first use” test.

Interconnection

- **NYISO interconnection studies are not required for DER located on a distribution system seeking to participate solely in the Energy markets by way of Aggregation**
 - Distribution-level DER interconnection for this purpose does not constitute a “first use” (i.e., a facility participating solely as part of a DER Aggregation does not make the facility/line “FERC jurisdictional” for interconnection purposes)
- **DER seeking to provide Capacity via Aggregation (*i.e.*, seeking CRIS rights) will still be required to obtain CRIS through the NYISO interconnection procedures, including a deliverability evaluation for units larger than 2 MW**
- **If a Resource that could participate as a DER seeks to participate outside the context of an Aggregation, and the resource is interconnecting to (1) the NYS Transmission System, or (2) to facilities on the distribution system subject to FERC interconnection procedures, the resource will be subject to the NYISO's Small Generator Interconnection Procedures.**

NYISO 2022 DER Implementation Strategy

NYISO 2022 DER Initiative

- **The focus of 2022 stakeholder engagements will include both 1) targeted discussions concerning detailed market design topics, and 2) review with, and collect feedback from, working groups to support new manual language updates to support implementation of, at a minimum, the FERC-accepted DER market design of 2020.**
 - The NYISO will facilitate these market design discussions with stakeholders in conjunction with manual language discussions, working with stakeholders to reflect the DER participation model in the new and revised manuals.
- **The NYISO is committed to enabling stakeholder participation and input in the implementation of DER throughout 2022.**

Targeted Discussions – Draft Concepts

■ Ongoing efforts to support deployment of original model:

- Operational Coordination
 - Ongoing effort, but described in Order 2222 compliance
 - Roles and responsibilities to ensure reliable dispatch of Aggregations of DER
 - Approach: Review coordination process and collaborate with stakeholders before incorporating into draft manual language to formalize process
- Metering and Settlement of DER
 - Issue raised by JU in stakeholder forum in 2021
 - Concerning the appropriate metering and settlement of DER configurations behind the meter
 - Approach: Review feasibility of options with JU to support NYISO DER market design implementation in 2022, work with stakeholders to incorporate any modifications into manual draft language or tariff

■ New efforts to support deployment of 2222 scope (To be delayed until 2020 model can be deployed initially):

- Registration & Enrollment
 - Concept described in Order 2222 compliance
 - Distribution Utility 60 Day Review process
 - Approach: Review workflow process with JU and stakeholders before incorporating into draft manual language to formalize process

NYISO Documentation Updates – Scope Analysis

- The NYISO anticipates updates to several documents, as well as the introduction of two new documents to support the implementation of DER in 2022.
- In order to efficiently complete the necessary updates and appropriately reflect the input of stakeholders, the NYISO encourages engagement in each working group where detailed topics and draft language will be examined.
- The NYISO intends to work with the JU+NYP&LIPA in advance when the language appropriately necessitates JU input to help build the framework – e.g., the NYISO requires JU+ NYP&LIPA input to understand what studies occur for a DER to ensure reliability is upheld on the distribution system.
- The NYISO intends to work with the JU and stakeholders simultaneously on language that necessitates such collaboration – e.g., NYISO, JU, and stakeholders need to agree on the draft operational coordination framework and communication expectations.

NYISO Documentation Updates

■ Group 1

1. Aggregation Manual*
2. Ancillary Services Manual
3. Day Ahead Scheduling Manual
4. Emergency Operations Manual
5. Transmission & Dispatch Operations Manual
6. Outage Schedule Manual
7. Control Center Requirements Manual
8. Direct Communications Manual / Procedure

■ Group 2

9. Day Ahead Demand Response Program Manual
10. Installed Capacity Manual
11. Reference Level Manual
12. Load Forecast Manual
13. MET Data User Guide

■ Group 3

14. Market Participant's User's Guide
15. Aggregation System User Guide*
16. Emergency Demand Response Program Manual
17. Transmission Congestion Contracts Manual
18. Demand Response Information System User's Guide
19. AMS Automated Market User's Guide

■ Group 4

20. Revenue Grade Metering Manual
21. SDX User Guide
22. Meter Services Entity Manual
23. ICAP Manual

*New NYISO document

Next Steps

Next Steps

- **The NYISO has not received a final ruling regarding its Order No. 2222 compliance framework, and thus will focus on the accepted 2020 DER market design features that are not impacted by the contingency of the Order.**
- **The NYISO will work with stakeholders to define the process by which existing resources (E.g., DSASP) may transition to DER participation.**
 - The NYISO intends to provide guidance for this transition process
- **The NYISO intends to return with initial discussions on draft language for Group 1 documents in February.**
- **The NYISO will continue to progress its software development to support DER implementation in Q4 of 2022.**
- **Please direct any additional feedback or follow up questions to DER_Feedback@nyiso.com**

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