New York ISO
Independent System Operator

Updates to 2019 DER and Aggregation Participation Model

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ICAPWG

January 6, 2023

Agenda

- Background & Overview
- Draft Tariff Language
- Next Steps

New York ISO

Background & Overview

- The NYISO filed its DER Market Design on June 27, 2019.
- FERC accepted the NYISO's proposed DER Market Design in January 2020.
- The NYISO has since worked towards deployment of the market design, in tandem with its FERC Order No. 2222 compliance initiative.
- Throughout the implementation process, the NYISO has identified areas in its previously accepted tariff where revisions are necessary to:
  - Clarify previously accepted concepts
  - Align the tariff with the NYISO's software implementation
- NYISO will submit a FPA 205 filing to FERC containing these revisions to become effective simultaneously with the scheduled deployment of DER in 2023.
- Today's presentation will review responses and accompanying updates to the draft tariff language that will be included in an upcoming FPA Sec. 205 filing.
  - The NYISO initially presented these concepts at the October 7, 2022, ICAPWG and November 8, 2022, ICAPWG
  - The NYISO reviewed the draft tariff language at the December 13, 2022, ICAPWG

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Draft Tariff Language – Feedback & Responses

Please Note: Supporting material from the December 13 ICAPWG on the following topics, as well as accompanying tariff language updates, can be found in the Appendix.

NYISO Provision of DER Data to the Distribution Utility

- **The NYISO proposed to add the following paragraph to Services Tariff Section 4.1.10**
  - "A Distribution Utility shall have the opportunity to review the reliability and safety impacts of each Distributed Energy Resource or group of Distributed Energy Resources that are connected to, or propose to connect to, the Distribution Utility's electric facilities. Such review shall take place prior to each Distributed Energy Resource's enrollment in the ISO Administered Markets, and whenever there is a modification to a Distributed Energy Resource. The ISO shall collect applicable physical and operational information for each Distributed Energy Resource and provide that information to the applicable Distribution Utility. A list of the required Distributed Energy Resource physical and operational information is available in the Aggregation System User Guide."
- **Stakeholders asked that the NYISO clarify types of changes to an existing DER or group of DER that will result in supplemental review by the Distribution Utility.**
  - The NYISO proposes to clarify that only material changes to the operational or physical characteristics of a DER or group of DER will result in supplemental review by a Distribution Utility:
  - "Such review shall take place prior to each Distributed Energy Resource's enrollment in the ISO Administered Markets, and whenever there is a material modification to a Distributed Energy Resource that changes its physical or operational characteristics that were previously evaluated by the applicable distribution utility."

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Removal of DSASP and DADRP Requirements

- **Stakeholders requested an update on the expected timeline for the transition of Resource from DSASP/DADRP to the DER participation model.**
- **NYISO continues to work on the DSASP/DADRP to DER transition:**
  - The removal of DSASP/DADRP tariff language will coincide with the eventual retirement of DSASP and DADRP; i.e., the language will remain effective for the duration of the anticipated transition period
  - The transition period shall begin on the date when the DER participation model becomes effective – no new DSASP/DADRP Resource registrations will be accepted as of that date
  - The transition period will allow existing DSASP and DADRP Resources to establish telemetry communication with the applicable TO, and complete the DER registration process
  - NYISO continues to assess the length of the transition period
- **The NYISO anticipates publishing guidance information regarding the transition timeline and effective dates in Q1, 2023.**

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Resources Changing Aggregations

- **The NYISO proposes a minor modification to Services Tariff Section MST 5.12.13.1 to clarify the rules related to DER changing Aggregations, not how an Aggregation can change its type:**
  - "An individual resource within an Aggregation ~~and/or an Aggregation~~ may only change from a homogenous Aggregation that is not a DER Aggregation to a DER Aggregation at the beginning of a Capability Year, provided that the Aggregation notifies the ISO by August 1 of the year prior to the beginning of the Capability Year. An individual resource within an Aggregation ~~and/or an Aggregation~~ may only change from a DER Aggregation to a homogeneous Aggregation that is not a DER Aggregation at the beginning of a Capability Year, provided that the Aggregation notifies the ISO by August 1 of the year prior to the beginning of the Capability Year."
- **Stakeholders recommended several grammatical updates to this language to ensure that it clearly represents rules for individual DER changing Aggregations.**
  - The NYISO proposes to integrate the green modifications as proposed by stakeholders to clarify this language:
  - "An individual resource within an Aggregation ~~and/or an Aggregation~~ may only change from participating in a homogenous Aggregation that is not a DER Aggregation to participating in a DER Aggregation at the beginning of a Capability Year, provided that the Aggregation notifies the ISO by August 1 of the year prior to the beginning of the Capability Year. An individual resource within an Aggregation ~~and/or an Aggregation~~ may only change from participating in a DER Aggregation to participating in a homogeneous Aggregation that is not a DER Aggregation at the beginning of a Capability Year, provided that the Aggregation notifies the ISO by August 1 of the year prior to the beginning of the Capability Year."

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Application of TSC/NTAC to Aggregations Containing Energy Storage Resources

- **Energy Storage Resources are subject to TSC and NTAC when the Energy Storage Resource is not providing a service.**
- **At the December 13 MIWG/ICAPWG, the NYISO proposed to modify OATT Sections 2.7.2.1.5 and 2.7.2.4.4 so that Aggregations containing one or more Energy Storage Resources is subject to TSC and NTAC.**
  - For example, in OATT Sec. 2.7.2.1.5, the NYISO proposes to add: "Aggregations containing one or more Energy Storage Resources shall pay a TSC directly to the Transmission Owner in whose Transmission District the Aggregation is located for the Aggregation's net withdrawals (i.e., when the Energy withdrawals of one or more Energy Storage Resources in the Aggregation are not providing a service and the withdrawals of those Energy Storage Resources exceed the sum of Energy injections and Demand Reductions."
  - Where applicable, the NYISO has inserted the phrase "and Aggregations containing one or more Energy Storage Resources"
- **Stakeholders proposed updates to clarify that the TSC/NTAC shall be applied to the Aggregation's net Actual Energy Withdrawals when the Aggregation is not providing a service:**
  - The NYISO proposes several updates throughout OATT Sections 2.7.2.1.5 and 2.7.2.4.4 to reinforce this concept
  - For example: "An Aggregation containing one or more Energy Storage Resources shall pay a TSC directly to the Transmission Owner in whose Transmission District the Aggregation is located when (i) the Aggregation is not providing a service, and (ii) the sum of the Aggregation's Energy injections, Demand Reductions, and Energy withdrawals is negative."

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Removal of DER and Aggregations from the NYISO-Administered Markets

- At the December 13 MIWG/ICAPWG stakeholders requested additional clarity regarding 1) What criteria shall be used to determine that a DER/Aggregation should be removed from wholesale market participation, and 2) how the NYISO will protect grid reliability in the event that a DER/Aggregation cannot be administratively removed from the market immediately.
- The NYISO proposes the following updates to Services Tariff Sec. 4.1.10:
  - The NYISO replaced "may be removed from the ISO Administered Markets" with "the ISO may fully or partially derate" an individual Resource and/or an Aggregation to be clear that this section is intended to address operational concerns, not market concerns
  - NYISO further clarified that the DER or Aggregation will be permitted to resume operation once the identified reliability and safety concerns are resolved
- Note that the NYISO and applicable Distribution Utility shall apply Transmission System and Distribution System best practices in line with the reliability rules of the governing authorities in the NYCA (NYSRC, NPCC, NERC) and existing NYISO policies and procedures to identify concerns for safety or reliability.

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Cost-Based References for Aggregations

- **Stakeholders requested additional explanation of the proposed modifications, including the reason why Aggregations would be ineligible to use LBMP- or Bid-based references.**
- **NYISO response:**
  - LBMP and Bid-based Reference levels are computed based on 90-day historical data reflecting a Resource's bids or applicable LBMPs
    - Aggregations may change in composition within a 90-day period – the reference level applied to an Aggregation may inappropriately reflect a different historical composition of technology types
  - Individual DER availability within an Aggregation may vary across hours in a day, and such variance could be incorrectly applied to the entire Aggregation's availability for all hours (e.g., an Aggregation containing a mix of solar and storage resources, where the solar resources are only contributing to the bid-performance of the Aggregation during hours with sufficient insolation)
    - NYISO's Bid- and LBMP-based reference designs are not able to account for such partial in-day variance within an Aggregation
  - Cost-based references enable an Aggregator to dynamically reflect different technology types within an Aggregation and inform the NYISO of which resource technologies are available on an hourly basis to inform the final reference level determination

New York ISO

ECBL Proxy Load Calculation

- **Stakeholders provided the following feedback at the December 13 MIWG/ICAPWG:**
  - The NYISO should consider permitting uneconomic Demand Reduction (*i.e.*, Demand Reduction that occurred at a Real-Time LBMP that is less than the Monthly Net Benefits Threshold) to be included in the calculation of ECBL
  - The NYISO should include clarify its draft redlines to achieve better consistency of the methodological updates reflected throughout
- **Offers for Aggregations that contain one or more Demand Side Resources may be structured to reflect the Monthly Net Benefits Threshold so that Demand Reductions are dispatched only when real-time LBMPs meet or exceed the Monthly Net Benefits Threshold price.**
- **The tariff revisions accompanying this presentation, and included on slide 23 in the Appendix, include textual changes for the purposes of clarity reflecting recommendations from stakeholders.**

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BPCG and DAMAP Equations

- **At the December 13 MIWG/ICAPWG, Stakeholders recommended that the NYISO review its proposed modifications to the tariff equations to ensure that the sign convention applied to each tariff-defined term does not conflict with the formulation of the 'net' AE.**
- **The NYISO has reviewed the proposed modifications in conjunction with its tariff definitions for Actual Energy Injection, Actual Energy Withdrawal, and Actual Demand Reduction.**
  - The NYISO proposes to re-order the Actual Energy Withdrawal and Actual Energy Injection terms, to resolve possible concerns for embedded sign conventions
  - The NYISO also proposes to add a clarifying clause regarding the 'net' of Actual Energy Withdrawals and Actual Energy Injections, and the sign convention associated with Withdrawals, Injections, and Demand Reductions for the purposes of Services Tariff Sec. 18 and 25.

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Next Steps

Next Steps

- **The NYISO will seek stakeholder approval of all concepts discussed today and the SCR → DER transition at the February 15 BIC and February 22 MC.**
  - Language included in the following meeting materials:
    - November 8, 2022, ICAPWG
    - December 13, 2022, ICAPWG
    - January 6, 2023, ICAPWG
- **NYISO will submit the proposed tariff revisions to FERC after approval by stakeholders and the NYISO Board, with a proposed effective date that is consistent with the effective date for the 2019 Aggregation model.**
  - The NYISO will seek an effective date for the tariff changes that is consistent with the implementation schedule for the 2019 market design, except for the tariff revisions related to DADRP and DSASP, which changes will align with the planned retirement of those programs.
- **The NYISO will return to the ICAPWG by February to review the details of the SCR → DER transition process and requirements.**
  - This transition was briefly introduced to stakeholders at the October 7, 2022, ICAPWG
  - The NYISO intends to include additional tariff provisions for the SCR → DER transition, which will also be reviewed with stakeholders
- **Please send any questions that were not addressed during this presentation to: DER_Feedback@nyiso.com**

New York ISO

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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Questions?

Appendix

Removal of DSASP and DADRP Requirements

- As part of the DER and Aggregation participation model, the NYISO will transition Demand Side Ancillary Services Program (DSASP) and Day-Ahead Demand Reduction Program (DADRP) Resources to the DER Model, and, when complete, retire the DSASP and DADRP.
- In 2019 the NYISO proposed to eliminate the DSASP and DADRP tariff language, but certain provisions were not marked as removed when filed.
- NYISO proposes to eliminate the DSASP and DADRP provisions from the following sections upon retirement of DADRP and DSASP:
  - MST 4.5.2.4;
  - MST 2.13; and
  - MST 13.3

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Cost-Based References for Aggregations

- The NYISO's 2019 filing did not specify the type of reference levels that an Aggregation would be eligible to use.
- The NYISO offers Cost-Based, Bid-Based, and LBMP-Based reference levels for Resources offering into the market.
- The NYISO will revise its tariff and procedures to provide that Aggregations shall be ineligible to use Bid- or LBMP-Based reference levels for Energy market mitigation.
  - Aggregations can change composition on a monthly basis

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Cost-Based References for Aggregations

- **The NYISO proposes to modify Services Tariff Sec. 23.3.1.4 as follows:**
  - This section includes three subsections which describe the process calculations for Bid-, LBMP-, and Cost-based Reference Levels
  - In the 2019 filing, the term 'Aggregation' was included in all three subsections
    - 23.3.1.4.1.1
    - 23.3.1.4.1.2
    - 23.3.1.4.1.3
  - The NYISO will 'reject' the redlines that added Aggregations to the Bid- and LBMP-based subsections, MST 23.3.1.4.1.1 and MST 23.3.1.4.1.2
    - E.g., "The lower of the mean or the median of a Generator's ~~or an Aggregation's~~ accepted Bids or Bid components, in hour beginning 6 to hour beginning 21 but excluding weekend and designated holiday hours, in competitive periods over the most recent 90-day period for which the necessary input data are available to the ISO's reference level calculation systems, adjusted for changes in fuel prices consistent with Section 23.3.1.4.6, below."

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ECBL Proxy Load Calculation

- The Economic Customer Baseline is the baseline used to calculate a Demand Side Resource's Demand Reduction
  - The ECBL is calculated from historic metered load from the same time interval from ten previous like days
  - Measured Demand Reduction = ECBL – Measured Load
- The Proxy Load is used as a stand in for historical Metered Load when the Demand Reduction is dispatched
- The NYISO will modify the tariff such that the Proxy Load is calculated as the sum of the Metered Load and the measured Demand Reduction
  - This shortens the ECBL lookback period when the Demand Side Resource is dispatched regularly
- If the Demand Side Resource reduces Load when LBMP is less than Monthly Net Benefits Threshold, measured Demand Reductions will not be included in the Proxy Load
  - The ECBL will only add back previous performance when the Demand Reduction is economic

New York ISO

ECBL Proxy Load Calculation cont'd [Update since 12/13/22]

- **The NYISO proposes to modify the Services Tariff as follows:**
  - Sec. 24.2.1.1
    - Definition of ECBL In-Day Adjustment Factor:

a) Calculate the ECBL In-Day Adjustment by subtracting the average of the ECBL over the three five-minute intervals of the ECBL In-Day Adjustment Period from the average of the metered load for the same three five-minute intervals, provided that (i) the DER Aggregation was not dispatched for Energy and/or Regulation Service during any of the three five-minute intervals of the ECBL In-Day Adjustment Period, or (ii) the DER Aggregation was dispatched for Energy and/or Regulation Service during one or more of the three five-minute intervals of the ECBL In-Day Adjustment Period, but the LBMP for each of those ~~the~~ interval(s) ~~in which a Demand Side Resource was dispatched to meet a schedule~~ was less than the applicable Monthly Net Benefits Threshold ~~in any of the three five-minute intervals of the ECBL In-Day Adjustment Period~~.

b) If the DER Aggregation was dispatched for Energy and/or Regulation Service during one or more of the three five-minute intervals of the ECBL In-Day Adjustment Period and the LBMP for one or more of ~~the~~ those interval~~(s)~~ was equal to or exceeded the applicable Monthly Net Benefits Threshold, calculate the ECBL In-Day Adjustment in step (a) above and add the measured Demand Reduction to the metered load as the Proxy Load value ~~by replacing the metered loads in step (a) above by the Proxy Load values~~ for one or more of the three five-minute intervals of the ECBL In-Day Adjustment Period in which the DER Aggregation was dispatched for Energy and/or Regulation Service.

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ECBL Proxy Load Calculation cont'd

- **The NYISO proposes to modify the Services Tariff as follows:**
  - Sec. 24.2.1.1
    - Proxy Load: The Proxy Load for a five-minute interval is the ~~adjusted ECBL for that interval calculated as per the instructions in Section 24.2.1.2 or 24.2.1.3~~ metered Load plus measured Demand Reductions.

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ECBL Proxy Load Calculation cont'd

- **The NYISO proposes to modify the Services Tariff as follows:**
  - Sec. 24.2.1.2
    - c) For each five-minute interval of the ECBL Weekday Window where (i) the DER Aggregation was dispatched for Energy and/or Regulation Service, and (ii) the LBMP for the five-minute interval was greater than or equal to the Monthly Net Benefits Threshold, select the Proxy Load values for that five-minute interval and day in place of the actual metered load for that interval.
  - Sec. 24.2.1.3
    - c) For each five-minute interval of the ECBL Weekend Window where (i) the DER Aggregation was dispatched for Energy and/or Regulation Service, and (ii) the LBMP for the five-minute interval was greater than or equal to the Monthly Net Benefits Threshold, select the Proxy Load Value for that hour and day in place of the actual metered load for the interval.

New York ISO

BPCG and DAMAP Equations

- The NYISO's 2019 DER filing provided that DER shall be eligible for DAMAP and BPCG only under certain circumstances, including when dispatched Out Of Merit (OOM).
- The NYISO has identified certain edits to its existing equations to determine the amount of BPCG and/or DAMAP to integrate DER, notably Demand Side Resources.
- The NYISO proposes certain modifications to the BPCG and DAMAP equations that incorporate DER and clarify the formulae.

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BPCG Equation [Update since 12/13/22]

- **The NYISO proposes to modify Services Tariff Sec. 18.4.2 as follows:**
  - Remove the expression for average Actual Demand Reductions by Supplier g in interval i (Given by ADR_{ig})
    - ADR_{ig} removed from the expression for EI^{RT}_{gi}
  - Revise AEI_{ig} to reflect average Actual Demand Reductions in the net response of an Aggregation:

AE_{ig}	=	either, (1) when scheduled to withdraw, average Actual Energy Withdrawals plus average Actual Energy Injections plus average actual Demand Reduction by ~~Generator or Aggregation~~Supplier g in interval i expressed in terms of MW; or (2) otherwise, average Actual Energy Withdrawals plus average Actual Energy Injections plus average actual Demand Reduction by Supplier g in interval i but not more than $RTSen_{ig}$ plus any Compensable Overgeneration expressed in terms of MW; for the purposes of this Section, Actual Energy Withdrawals shall be negative values or zero, and Actual Energy Injections and actual Demand Reduction shall be positive values or zero;
~~ADR_{ig}~~	=	~~average Actual Demand Reductions by Supplier g in interval i;~~

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DAMAP Equation [Update since 12/13/22]

- **The NYISO proposes to modify Services Tariff Sec. 25.3.3 as follows:**
  - Remove the expression for average Actual Demand Reductions by Supplier u in interval i (Given by ADR_{iu})
    - ADR_{iu} removed from the expressions for LI_{iu} *and* UL_{iu}
  - Revise AEI_{iu} to reflect average Actual Demand Reductions in the net response of an Aggregation scheduled to withdraw or to be idle:

AE_{iu} = either, (1) when $RTSen_{iu}$ is greater than zero MW, average Actual Energy Withdrawals plus average ~~a~~Actual Energy ~~i~~Injections ~~or withdrawals~~ plus average actual Demand Reduction by Supplier u in interval i but not more than $RTSen_{iu}$ plus Compensable Overgeneration; or (2) when $RTSen_{iu}$ is less than or equal to zero MW, average Actual Energy Withdrawals plus average ~~a~~Actual Energy ~~i~~Injections ~~or~~plus ~~withdrawal~~ average actual Demand Reduction by Supplier u in interval i; for the purposes of this Section, Actual Energy Withdrawals shall be negative values or zero, and Actual Energy Injections and actual Demand Reduction shall be positive values or zero;

~~ADR_{iu}~~ = ~~average Actual Demand Reduction by Supplier u in interval i;~~

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