New York ISO
Independent System Operator

# Updates to 2019 DER and Aggregation Participation Model


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## ICAPWG

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# Agenda

- Background & Overview
- Draft Tariff Language
- Next Steps

# 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 draft tariff language that will be included in an upcoming FPA Sec. 205 filing.
  - The NYISO presented these concepts at the October 7, 2022, ICAPWG and November 8, 2022, ICAPWG

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# Draft Tariff Language

# NYISO Provision of DER Data to the Distribution Utility

- **The NYISO proposes 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."

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# Telemetry Data

- **The NYISO proposes to modify Services Tariff Section 4.1.10.4 as follows:**
  - "Real-time telemetry data and revenue-quality meter data shall be submitted for each Aggregation. Real-time telemetry for DER Aggregations shall consist of ~~three~~ four parts: (i) ~~the net of~~ Energy injections, ~~and~~ (ii) Energy withdrawals by Withdrawal Eligible Generators, (iii) Demand Reductions, ~~;~~ and (~~iii~~ iv) the sum of ~~both~~ (i), (ii) and (iii). Revenue-quality meter data for each DER Aggregation shall consist of three parts: (i) Energy injections; (ii) Energy withdrawals by Withdrawal-Eligible Generators; and (iii) Demand Reductions. Aggregations of other Resource types shall submit meter data in accordance with Services Tariff Section 13 and the ISO Procedures."

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# Station Power

- **The NYISO proposes a minor modification to Services Tariff Section 2.19 to clarify that the Energy used by a Resource in any Aggregation is not considered Station Power:**
  - "Station Power does not include any Energy: (i) used to power synchronous condensers; (ii) used for pumping at a pumped storage facility or for charging Limited Energy Storage Resources and Energy Storage Resources when that Energy is stored for later injection back to the grid; (iii) provided during a Black Start restoration by Generators that provide Black Start Capability Service; or (iv) used by a Resource in an ~~DER~~ Aggregation."

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# Submission of Aggregation Meter Data

- At the October 7 ICAPWG, the NYISO stated that it would revise the Services Tariff to define which entity is responsible for submission of revenue quality meter data to the ISO for each Aggregation.
- The NYISO will not revise the tariff to reflect this clarification, as it will be documented in the NYISO's applicable Manuals & Procedures – the responsibility to submit revenue quality meter data shall be maintained by the Aggregation's Meter Authority.
  - This process shall be reflected in the NYISO's Aggregation Manual and Revenue Metering Requirements Manual

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# 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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# 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."

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# Energy Storage Resources Charging at a Retail Rate

- **The NYISO proposes to add the following rule to Services Tariff Section 4.1.10.1:**
  - "When an Aggregation contains one or more Energy Storage Resources, and the applicable Load Serving Entity requires the Energy Storage Resource to also pay a retail rate for its charging withdrawals, all Energy Storage Resources in the Aggregation shall be customers of the same Load Serving Entity and pay the Load Serving Entity's applicable retail rate. An Aggregation that includes one or more Energy Storage Resources that are required to pay a retail rate for its charging withdrawals is subject to the Services Tariff Section 7.2.8 settlement rules for Energy Storage Resources."
- **The NYISO also proposes to modify Services Tariff Section 7.2.8 to include Aggregations containing one or more Energy Storage Resources.**
  - E.g. "If a Load Serving Entity requires the Energy Storage Resource, or Aggregation containing one or more Energy Storage Resources, to also pay a retail rate for its charging withdrawals, then the ISO shall issue a credit to the affected Customer for the associated Actual Energy Withdrawals and assess a charge to this Load Serving Entity for the same Actual Energy Withdrawals.

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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.**
- **NYISO proposes 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"

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# Uplift Reporting

- **The NYISO proposes two modifications to the Resource-Specific Uplift Reporting requirements in Services Tariff Section 4.1.3.3:**
  - First, the NYISO proposes to add Aggregations
  - The NYISO will propose that this change become effective simultaneously with the 2019 DER and Aggregation participation model implementation in 2023
  - Second, the NYISO proposes to remove references to DSASP and DADRP Resources (identified in red below)
    - The NYISO will propose that this change become effective when the DSASP and DADRP are retired, after existing resources are transitioned to the DER model
  - "Resource-Specific Uplift Report. The ISO shall post on a publicly accessible portion of its website, in machine-readable format, a report on total uplift paid to Generators, Aggregations, ~~Demand Side Ancillary Service Program Resources, Day Ahead Demand Response Program resources or aggregations,~~ and to Special Case Resource aggregations, on a monthly basis. The report shall provide the total uplift payment across all uplift categories paid to each Generator, Aggregation, or Special Case Resource aggregation~~s of Demand Side Resources~~. The report shall be posted no more than 90 calendar days after the conclusion of each month and shall be updated approximately 120 days after an initial invoice was issued for the month, to incorporate updated information."

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# Aggregation Metering

- **The NYISO proposes to add new Services Tariff Section 13.3.1.4:**
  - "All individual Resources within an Aggregation must use the same Meter Authority. A DER Aggregation may use either the applicable Member System or a qualified Meter Services Entity as its Meter Authority. Single Resource Type Aggregations (*e.g.*, an Aggregation comprised of only Energy Storage Resources) may only use the applicable Member System."

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# Wind and Solar Output Limit Definition

- **The NYISO proposes to modify Services Tariff Section 2.23 as follows:**
  - **Wind and Solar Output Limit:** A Base Point Signal calculated for an Intermittent Power Resource depending on wind or solar energy as its fuel and which, when sent to the Intermittent Power Resource, shall include a separate flag directing the Intermittent Power Resource not to exceed its Base Point Signal. ~~All~~ Intermittent Power Resources that depend ~~depending~~ on wind or solar energy as their fuel shall be eligible to receive a Wind and Solar Output Limit, ~~other than~~ except for those that depend on wind for their fuel and were in commercial operation as of January 1, 2002 with a name plate capacity of 12 MWs or fewer, and Resources depending on wind or solar energy as their fuel that participate in a DER Aggregation~~, shall be eligible to receive a Wind and Solar Output Limit~~.

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# Removal of DER and Aggregations from the NYISO-Administered Markets

- **The NYISO proposes to modify Services Tariff Section 4.1.10 to authorize the removal of an individual DER or an Aggregation from the NYISO-administered markets to maintain safety and reliability.**
  - This action may be taken when the NYISO identifies transmission system safety or reliability concerns, or when a distribution utility identifies safety or reliability concerns to their electric facilities.
- **The NYISO proposes to add the following paragraphs to Services Tariff Section 4.1.10:**
  - An individual Resource and/or an Aggregation may be removed from the ISO Administered Markets if the ISO or an applicable distribution utility determines that a Distributed Energy Resource or group of Distributed Energy Resources presents significant risk(s) to the safe and reliable operation of the Transmission System or distribution system. If an individual Resource and/or an Aggregation is removed from the ISO Administered Markets by the ISO or distribution utility, the ISO shall notify the applicable Aggregator as soon as practicable of the removal and reason for removal.
  - An Aggregator may remove an individual Resource and/or Aggregation from the ISO Administered Markets upon thirty (30) calendar days' notice to the ISO, and such removal will become effective at the beginning of a calendar month.

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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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# DER Interconnection Agreements

- **The NYISO's 2019 DER market design provided that DER market entry requires an effective interconnection agreement.**
  - In Order No. 2222 the FERC disclaimed jurisdiction over interconnection of DER interconnecting for the sole purpose of participation in the wholesale markets through an Aggregation
  - DER interconnecting for the sole purpose of participation in the wholesale markets through an Aggregation are therefore not subject to the NYISO's SGIP
- **The NYISO will update its tariff to require that Aggregators ensure Aggregation operating parameters are consistent with the applicable Interconnection Agreements of the DER in the Aggregation.**
  - Aggregators will be responsible for compliance with the terms of the interconnection agreements of the DER they represent

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# DER Interconnection Agreements

- **The NYISO proposes to add the following clause to Services Tariff Sec. 4.1.10.1:**
  - Aggregators shall ensure Aggregation operating parameters are consistent with the applicable interconnection agreements for the DER in the Aggregation.

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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

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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
    - 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, or (ii) the LBMP for 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 the 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.

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# 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

- **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:

$AE\sout{I}_{ig}$ = either, (1) when scheduled to withdraw, average Actual Energy Withdrawals + Actual Energy Injections~~Withdrawals~~ + actual Demand Reductions by ~~Generator or Aggregation~~Supplier g in interval i expressed in terms of MW; or (2) otherwise, average Actual Energy Injections + Actual Energy Withdrawals + actual Demand Reductions~~s~~ by ~~Generator~~Supplier g in interval i but not more than $RTSen_{ig}$ plus any Compensable Overgeneration expressed in terms of MW;

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# DAMAP Equation

- **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 ~~a~~Actual Energy ~~i~~Injections ~~or~~plus average Actual Energy ~~w~~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 ~~a~~Actual Energy ~~i~~Injections ~~or~~plus average Actual Energy ~~w~~Withdrawals plus average actual Demand Reduction by Supplier u in interval i;

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

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# Next Steps

# Next Steps

- The NYISO will seek approval from the January 18 BIC and January 25 MC.
- NYISO intends to seek Board of Directors approval in February.
- NYISO anticipates filing the tariff with FERC in March with an effective date that aligns with the effective date for the 2019 Aggregation model.
  - 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.
- Please send any questions that were not addressed during this presentation to: DER_Feedback@nyiso.com

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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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# Questions?