New York ISO
Independent System Operator

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July 19, 2021

By Electronic Delivery

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: New York Independent System Operator, Inc.; Compliance Filing and Request for Flexible Effective Date; Docket Nos. RM18-9-000, ER21-___-000

Dear Ms. Bose:

The New York Independent System Operator, Inc. ("NYISO") respectfully submits this filing in compliance with Order No. 2222, *et al.*, *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators* ("Order No. 2222"), which was issued by the Federal Energy Regulatory Commission ("Commission") on September 17, 2020.[1]

The NYISO respectfully submits that its industry-leading Distributed Energy Resource ("DER") and Aggregation participation model,[2] accepted by the Commission on January 23, 2020,[3] satisfactorily complies with the vast majority of Order No. 2222's directives.[4] The NYISO proposes amendments to its Market Administration and Control Area Services Tariff ("Services Tariff") and Open Access Transmission Tariff ("OATT") (collectively, the "NYISO Tariffs") to comply with the remaining directives.[5]

Part IV of this letter demonstrates the NYISO's compliance with Order No. 2222 via its existing market rules. Part V describes each of the tariff modifications the NYISO proposes to achieve compliance with Order No. 2222. Specifically, the NYISO proposes tariff revisions to address directives related to (i) the requirement that a relevant electric retail regulatory authority ("RERRA") to "opt-in" to wholesale market participation for customers of utilities delivering 4

[1] *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 2222, 172 FERC 61,247 (Sep. 17, 2020), 85 Fed. Reg. 70,143 (Nov. 4, 2020); Order No. 2222-A, 174 FERC ¶ 61,197 (Mar. 18, 2021); Order No. 2222-B, 175 FERC ¶ 61,227 (Jun. 17, 2021).

[2] *See* New York Indep. Sys. Operator, Inc., Proposed Tariff Revisions Regarding Establishment of Participation Model for Aggregations of Resources, Including Distributed Energy Resources, and Proposed Effective Dates, Docket No. ER19-2276 (June 27, 2019) ("June 27 Filing").

[3] *New York Indep. Sys. Operator, Inc.*, Order Accepting Tariff Revisions and Directing Compliance Filing and Informational Report, 170 FERC ¶ 61,033 (Jan. 23, 2020) ("DER Order").

[4] Capitalized terms that are not otherwise defined in this filing shall have the meaning specified in Section 2 of the Services Tariff and Section 1 of the OATT.

[5] The tariff sections referenced in this filing letter are located in the Services Tariff, unless otherwise indicated.

million megawatt-hours ("MWh") or less per year, (ii) interconnection of DER for the exclusive purpose of participating in an Aggregation, (iii) prevention of double counting of services provided by a DER, (iv) single resource aggregations, (v) coordination among the NYISO, Aggregators, and Distribution Utilities, and (vi) market participation agreements.

All of the proposed tariff revisions included in this compliance filing are either expressly required under Order No. 2222, necessary to implement or clarify the existing tariff language to accommodate the Order's directives, or non-substantive organizational or clarifying adjustments of the kind that the Commission has previously permitted in compliance filings. The proposed revisions build upon the NYISO's existing Commission-approved market and planning rules. They are carefully designed to be compatible with existing rules and processes. The NYISO respectfully submits that its proposed tariff revisions, in combination with its accepted rules applicable to DER and Aggregations, comply with the directives of Order No. 2222, are fully supported, are just and reasonable, and should be accepted without modification or condition.

As described in Part VI of this filing letter, the NYISO respectfully requests that the Commission take action to accept the proposed tariff revisions within sixty (60) days of this filing, *i.e.*, by September 17, 2021, so that the NYISO can continue developing and deploy the required software changes for DER and Aggregation participation as soon as possible (currently projected in the fourth quarter of 2022). Some of the changes proposed in this filing will require changes to the software NYISO is in the process of developing to implement its DER and Aggregation rules.

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I. Background

A. NYISO Process to Expand Distributed Energy Resource Participation in its Markets and Order No. 2222

In May 2016, the NYISO initiated a process to integrate distributed energy resources in its wholesale markets.[6] The NYISO identified numerous benefits distributed energy resources are expected to bring, including improving system reliability, energy security, and fuel diversity, along with lowering consumer prices, improving market efficiency, and allowing consumers to take greater control of their electricity use and costs through a variety of new technologies.

The NYISO worked with stakeholders throughout 2018 and early 2019 to develop and enhance the market design and to develop the related tariff requirements.

In parallel with the NYISO's process, the Commission initiated a proceeding to explore the integration of Energy Storage Resources and Distributed Energy Resources, and in November 2016 the Commission issued a Notice of Proposed Rulemaking in which it proposed to amend the Commission's regulations to remove barriers to the participation of electric storage resources and distributed energy resource aggregations in the capacity, energy, and ancillary service markets operated by RTOs and ISOs.[7] Among other things, the November 2016 NOPR proposed to require RTO/ISOs to revise their tariffs to allow distributed energy resource aggregators to participate directly in their organized wholesale electric markets and to establish market rules to accommodate the participation of such aggregations.[8]

On February 15, 2018, the Commission issued a final rule in that proceeding – Order No. 841.[9] In Order No. 841, the Commission elected not to take final action concerning its proposed revisions for distributed energy resource aggregations, determining that more information was required concerning its proposals.[10] The Commission instead initiated a new proceeding and held a Technical Conference to gather additional information and help determine appropriate requirements for its proposed distributed energy resource aggregation reforms.[11]

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[6] *See Distributed Energy Resources Roadmap Kickoff (Concepts for the Wholesale Market) Presentation*, Market Issues Working Group (May 24, 2016); *available at*: https://www.nyiso.com/documents/20142/1409369/DER%20Roadmap%20Kickoff.pdf.

[7] *Notice of Proposed Rulemaking, Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 157 FERC ¶ 61,121 (2016) (Nov. 17, 2016) ("November 2016 NOPR").

[8] November 2016 NOPR at P 132.

[9] *See Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 841, 162 FERC ¶ 61,127 (February 15, 2018), 83 Fed. Reg. 9580 (Mar. 6, 2018), Errata Notice (Feb. 28, 2018) ("Order No. 841"). All citations to Order No. 841 in this compliance filing are to the revised order included with the February 28, 2018, errata notice.

[10] Order No. 841 at P 5.

[11] *Id.*

While the Commission's proceeding was pending, the NYISO proposed a participation model for DER and Aggregations under Section 205 of the Federal Power Act ("FPA").[12] The participation model will enable a Market Participant to group individual facilities located on the transmission and/or distribution system to form a single entity – an Aggregation – for the purpose of participating in the NYISO-administered Energy, Ancillary Services, and Installed Capacity markets. The Aggregation will be required to satisfy the applicable eligibility and performance requirements necessary to participate in the NYISO-administered markets. More specifically, the NYISO's Commission-accepted filing included: (i) requirements for the eligibility, composition, and participation of Aggregations, including the inclusion of distributed energy resources; (ii) requirements for Aggregations' participation in the NYISO-administered Energy and Ancillary Services markets; (iii) rules for dual participation in the NYISO-administered markets and in programs or markets operated to meet the needs of distribution systems or host facilities; (iv) revised metering and telemetry requirements, including the introduction of a new entity – a Meter Services Entity – that may qualify to provide third-party metering and meter data services; (v) settlement rules for Aggregations; (vi) requirements for Aggregations' participation in the NYISO-administered Installed Capacity market; (vii) revised interconnection requirements; and (viii) other tariff revisions required to account for the physical and operational characteristics of Aggregations and DER. The Commission accepted the NYISO's DER and Aggregation participation model on January 23, 2020.[13] The NYISO anticipates implementing its DER and Aggregation participation model in the fourth quarter of 2022.

On September 17, 2020, the Commission issued Order No. 2222 requiring RTOs and ISOs to revise their tariffs to facilitate the participation of DER in the competitive markets. The Order stated that the new rules will allow distributed energy resources, in aggregate, to meet minimum size and performance requirements, help address commercial and transactional barriers to distributed energy resource aggregations, and assist RTOs and ISOs to respond to near-term generation or transmission reliability-related requirements.[14] To facilitate compliance with the Commission's distributed energy resource rules, Order No. 2222 requires "each RTO/ISO to revise its tariff to establish distributed energy resource aggregators as a type of market participant that can register distributed energy resource aggregations under one or more participation models in the RTO/ISO tariff that accommodate the physical and operational characteristics of each distributed energy resource aggregation."[15] The NYISO respectfully submits that its DER and Aggregation participation model, in combination with the limited tariff revisions proposed herein, complies with the Commission's directives in Order No. 2222 as explained in the remainder of this filing.

[12] *See* June 27 Filing.

[13] *See* DER Order.

[14] Order No. 2222 at P 4-5.

[15] *Id*. at P 6.

II. Overview

A. The NYISO's Compliance with Order No. 2222 Directives

In this Part, the NYISO provides an overview of its compliance with the directives of Order No. 2222.

- *Order No. 2222 requires each RTO/ISO to establish distributed energy resource aggregators as a type of market participant that can register distributed energy resource aggregations under one or more participation models, accommodating the physical and operational characteristics of each distributed energy resource aggregation.*[16]

The DER and Aggregation[17] participation model comprises a comprehensive set of market rules facilitating DER and Aggregation participation in the NYISO's Energy, Ancillary Services, and Installed Capacity markets. The participation model classifies an Aggregator[18] as a Market Participant that interfaces with the NYISO concerning the participation of the Aggregation in the NYISO-administered markets. Specifically, the Aggregator will be a "Supplier" under the NYISO Tariffs that may offer "Capacity, Energy, and/or Ancillary Services for an Aggregation."[19]

The NYISO defines an Aggregation as "[a] Resource, comprised of two or more individual Generators, Demand Side Resources, or Distributed Energy Resources, or one or more individual Demand Side Resources, at separate points of interconnection and that are grouped and dispatched as a single unit by the ISO, and for which Energy injections, withdrawals and Demand Reductions are modeled at a single Transmission Node."[20] The NYISO proposes a modification to this definition in Section VII.B of this filing to permit Aggregations of a single resource in compliance with Order No. 2222.

The individual facilities (DER) that participate in an Aggregation will not ordinarily be expected to meet the NYISO's minimum eligibility and performance requirements (except when the Aggregation consists of a single DER). Instead the Aggregation will be required to satisfy the minimum eligibility and performance requirements for wholesale market participation.[21]

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[16] *Id.*

[17] In this filing the NYISO uses the term "aggregation" when (i) referring to or quoting the term as used in Order No. 2222, and (ii) to refer generally to aggregations. The NYISO uses the term "Aggregation" to refer specifically to the term defined in accepted Section 2.1 of the Services Tariff and accepted Section 1.1 of the OATT.

[18] In this filing the NYISO uses the term "aggregator" when (i) referring to or quoting the term as used in Order No. 2222, and (ii) to refer generally to aggregators. The NYISO uses the term "Aggregator" to refer specifically to the term defined in accepted Section 2.1 of the Services Tariff and accepted Section 1.1 of the OATT.

[19] Accepted Services Tariff Sec. 2.1. Many of the market rules proposed and accepted in Docket No. ER19-2276-000, *et al.*, have not yet become effective. Such market rule citations are identified as an "Accepted" Tariff Section in the instant filing to make clear that they are accepted, but not effective.

[20] *Id.*

[21] Accepted Services Tariff Sec. 4.1.10.

Aggregations will be Bid, scheduled, dispatched and settled as a single Resource, and the services the Resource will be eligible to qualify to provide will reflect the composition of the Aggregation as a whole.[22] The NYISO developed the DER and Aggregation participation model to address the physical and operational characteristics of DER and Aggregations.

- *Order No. 2222 requires each RTO/ISO to establish a minimum size requirement for distributed energy resource aggregations that does not exceed 100 kW.*[23]

The NYISO's DER and Aggregation participation model requires that each transaction offered in the Energy, Ancillary Services, and Installed Capacity markets on behalf of an Aggregation have a minimum offer of 100 kW.[24] The requirement reflects the NYISO's goal of encouraging integration of small facilities in the NYISO-administered markets.

- *Order No. 2222 requires each RTO/ISO to address locational requirements for distributed energy resource aggregations.*[25]

The DER and Aggregation participation model requires that each individual facility within an Aggregation be electrically located in the New York Control Area ("NYCA"), and electrically connected to the same NYISO-identified Transmission Node.[26] Requiring facilities within an Aggregation to be electrically connected to the same Transmission Node will enable the NYISO to manage transmission constraints and reliability concerns thereby resulting in lower overall production costs. Settling Aggregations at the individual Transmission Node Locational Based Marginal Price ("LBMP"), rather than a zonal average LBMP, will encourage DER to locate where they will improve grid reliability while also benefitting consumers.[27]

The NYISO will identify Transmission Nodes throughout the NYCA, following consultation with the New York Transmission Owners, and will reflect the collection of electrical facilities (*e.g.*, distribution feeder lines) associated with the Transmission Node to which individual facilities may aggregate.[28]

- *Order No. 2222 requires each RTO/ISO to address distribution factors and bidding parameters for distributed energy resource aggregations.*[29]

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[22] *Id.*

[23] Order No. 2222 at P 8.

[24] Accepted Services Tariff Sec. 4.1.4.

[25] Order No. 2222 at P 204.

[26] Accepted Services Tariff Sec. 4.1.10.2.

[27] Scheduling and settling resources that could qualify to participate using a stand-alone participation model at its actual electrical location would provide more accurate Energy and Ancillary Services market participation incentives than using Transmission Nodes.

[28] Accepted Services Tariff Sec. 4.1.10.2.

[29] Order No. 2222 at P 225.

The NYISO's DER and Aggregation participation model will not require that an Aggregator provide distribution factors for the individual facilities participating in an Aggregation. Distribution factors are typically used when the individual Resources in an Aggregation are located at multiple bulk power system nodes, and allow the grid operator to approximate where on the system to expect an Aggregation's energy injections, energy withdrawals, and demand reductions. Since the NYISO will model the Aggregation at a single Transmission Node, grid operators will know where on the Transmission System to expect an Aggregation's response.

Bidding requirements necessary to schedule, dispatch, and settle Aggregations are included in the DER and Aggregation participation model. Aggregations will be dispatch-only, and will not be eligible to submit commitment costs. However, the vast majority of the NYISO's bidding and scheduling constructs applicable to Generators will apply to Aggregations.

Single Resource-type Aggregations will utilize the bidding parameters for the specific Resource type (*e.g.,* an Aggregation of only Energy Storage Resources ("ESRs") will utilize the ESR participation model bidding parameters). The NYISO also developed certain DER Aggregation-specific bidding requirements that address the operational needs of heterogeneous Aggregations. The particular services that an Aggregation may provide, and therefore the specific bidding requirements that apply, will depend on the individual facilities in the Aggregation and the Aggregation's ability to meet the applicable bidding requirements. Due to the structure of the NYISO's Aggregation model, only minor modifications to specific bidding parameters were required to address specific bidding parameters related to Energy withdrawals by Aggregations containing at least one Withdrawal-Eligible Generator.

- *Order No. 2222 requires each RTO/ISO to address information and data requirements for distributed energy resource aggregations.*[30]

Aggregators will be required to submit information and data about the Aggregation and the individual facilities comprising the Aggregation. For example, an Aggregator will be required to provide, for each Aggregation, the NYISO Load Zone and subzone in which it is located and the applicable Transmission Node at which the individual facilities will aggregate. It will also need to identify the designated Meter Authority that will serve the Aggregation. The NYISO will also collect information on the collective capability of the Aggregation, including its Upper and Lower Operating Limits.

Aggregators will also be required to identify each individual facility participating in an Aggregation, and provide information about those facilities. Some of the data collected for an individual facility will be similar to that collected for the Aggregation (*e.g.,* Upper and Lower Operating Limits), but the NYISO will also require the Aggregator to provide, for example, data on individual facility interconnections, Capacity Resource Interconnection Service ("CRIS") allocations, Generator sub-types (*e.g.*, Energy Limited Resource), and fuel types.

[30] *Id*. at P 236.

The NYISO continues to develop its Aggregation management software, including the list of Aggregation and individual facility characteristics that it will require the Aggregator to provide. Once it completes this evaluation and development, it will present stakeholders with the completed list. The NYISO intends to document this information in a forthcoming business practice manual addressing Aggregation participation in the NYISO-administered markets.

- *Order No. 2222 requires each RTO/ISO to address metering and telemetry requirements for distributed energy resource aggregations.*[31]

Metering and telemetry requirements for DER and Aggregations will be similar to the metering and telemetry requirements for other Resources. The Aggregation will receive real-time Base Point Signals from the NYISO, and will provide real-time telemetry signals to the NYISO.[32] Individual facilities within an Aggregation will not need to provide real-time telemetry or receive real-time Base Point Signals. Instead, and as further explained in Part IV.F, the Aggregator will provide real-time telemetry and after-the-fact revenue-quality meter data for the Aggregation's Energy injections, Energy withdrawals, and Demand Reductions. If more than one resource within the Aggregation is, for example, withdrawing Energy in an interval, the real-time telemetry and meter data used for settlement shall show the aggregated Energy withdrawals for that increment.

The NYISO also requires revenue-quality meter data from each Aggregation for settlement purposes. Individual facilities within the Aggregation will not be required to submit revenue-quality data. Communicating with the Aggregation, rather than the individual facilities, will minimize real-time and after-the-fact administrative burdens on the NYISO, Aggregators, and individual facilities. It is also consistent with the NYISO's bidding and settlement rules, which treat the Aggregation as a singular Resource.

Metering and telemetry data provided by the Aggregator for Aggregations will contain multiple streams of data in order to account for the Aggregation's Energy injections, Energy withdrawals (by Withdrawal-Eligible Resources in the Aggregation), and Demand Reductions.[33] These distinct streams of data will permit the NYISO to account for the Aggregation's operations (for example, allowing the NYISO to apply the Order No. 745 Net Benefit Threshold to the Aggregation's Demand Reductions). Aggregators will be responsible for ensuring that all measurements for metering and telemetry for the individual facilities it represents derive from either directly measured or calculated values, or a combination thereof, in accordance with the requirements set forth in the ISO Procedures. The NYISO's accepted rules are expected to reduce costs to individual facilities and Aggregators, yet provide the ability for the NYISO to audit meter data if necessary.

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[31] *Id.* at P 262.

[32] Accepted Services Tariff Sec. 4.1.10.4.

[33] *Id.*

- *Order No. 2222 requires each RTO/ISO to address coordination between the RTO/ISO, the distributed energy resource aggregator, the distribution utility, and the relevant electric retail regulatory authorities.*[34]

Since 2016, the NYISO has worked with the New York Transmission Owners to identify and develop appropriate operating procedures and protocols to facilitate DER and Aggregation participation in the wholesale markets, including dual participation (simultaneous participation in the wholesale markets and in retail programs developed and administered by the utilities). The scheduling and dispatch of such resources requires operational coordination among the wholesale Market Participant, the NYISO, and the applicable Distribution Utility.[35] The coordination protocols developed over the last several years build upon and enhance the operational coordination that has been developed and refined over time for conventional Generators. As described in Part V.D of this filing letter, the NYISO proposes modifications to the NYISO Tariffs to comply with the Order No. 2222 directives related to coordination among the NYISO, Aggregator, Utilities, and RERRA. These tariff modifications reflect the combined work of the NYISO and utilities to maintain safety, and transmission and distribution system reliability.

- *Order No. 2222 requires each RTO/ISO to address modifications to the list of resources in a distributed energy resource aggregation.*[36]

The DER and Aggregation participation model permits modifications to the facilities participating in an Aggregation.[37] Aggregators are permitted to add new facilities to the Aggregation (at the beginning of a month), and remove facilities from the Aggregation (at any time). A facility may also switch Aggregations upon at least ninety calendar days' notice (the change will become effective at the beginning of a month). The NYISO's DER and Aggregation participation model had originally proposed that the NYISO be provided thirty days' notice of an individual facility switching Aggregations.[38] However, to address the Commission's directive that Distribution Utilities be permitted up to sixty days to evaluate distributed energy resource participation in the wholesale markets, the NYISO proposes to modify this notification requirement.[39] The rules developed for the DER and Aggregation participation model also facilitate the ability for a facility to change its elected participation model (*e.g.*, a battery

[34] Order No. 2222 at P 278.

[35] The NYISO proposes to define a "Distribution Utility" as "[a]n entity, such as a Transmission Owner or Public Power Entity that owns and operates facilities used for the retail distribution of electricity and provides retail service(s) under tariffs approved by the applicable Relevant Electric Retail Regulatory Authority." Proposed Services Tariff Sec. 4.1.10.5.

[36] Order No. 2222 at P 335.

[37] Accepted Services Tariff Sec. 4.1.10.3.

[38] *Id.*

[39] *See* Part IV.G.

participating in a DER Aggregation may transition to a stand-alone ESR, provided it meets the minimum eligibility requirements to participate as an ESR and provides the necessary notice).[40]

- *Order No. 2222 requires each RTO/ISO to address market participation agreements for distributed energy resource aggregators.*

The NYISO's existing processes address the Commission's directive to include market participation agreements, but those processes will be augmented to facilitate integration of DER and Aggregation. Specifically, the NYISO will require Aggregators to provide the data necessary to establish an Aggregation and additional information to enroll the participating facilities. As part of those registration requirements, the Aggregator will be required to attest that it has all necessary authorizations from the applicable Distribution Utility and local regulator for the individual facilities and Aggregation to participate in the wholesale markets.

- *Order No. 2222 requires each RTO/ISO to not accept bids from a distributed energy resource aggregator if its aggregation includes distributed energy resources that are customers of utilities that distributed 4 million megawatt-hours or less in the previous fiscal year, unless the relevant electric retail regulatory authority permits such customers to be bid into the RTO/ISO markets by a distributed energy resource aggregator.*

Order No. 2222 requires that an RTO/ISO not accept bids from an Aggregator when an Aggregation contains a customer of a small utility (that is, a utility that distributed 4 million MWh or less in the prior fiscal year). The NYISO proposes to require each Aggregator to (i) identify whether the utility for each individual Resource within its Aggregation is a small utility, and, if so, (ii) attest that the RERRA for that small utility affirmatively authorizes the small utility's customers to participate in the wholesale markets in an Aggregation. The NYISO will require such attestation prior to permitting the individual facility to be offered as part of an Aggregation, and annually thereafter.

B. Stakeholder Process

The DER and Aggregation rules that the NYISO filed in 2019 were developed in coordination with the NYISO's stakeholders and approved by the NYISO's Management Committee and by its Board of Directors. Following the issuance of Order No. 2222, the NYISO identified areas requiring further tariff modification, and presented its proposed compliance revisions to its stakeholders in advance of submitting this filing.

[40] Accepted Services Tariff Sec. 5.12.13.1.

III. Documents Submitted

Along with this filing letter, the NYISO respectfully submits the following documents:

1. A clean version of the proposed revisions to the NYISO's Services Tariff ("Attachment I");

2. A blacklined version of the proposed revisions to the NYISO's Services Tariff ("Attachment II");

3. A clean version of the proposed revisions to the NYISO's OATT ("Attachment III"); and

4. A blacklined version of the proposed revisions to the NYISO's OATT ("Attachment IV").

IV. NYISO DER and Aggregation Participation Model Compliance with Order No. 2222

The DER and Aggregation participation model is a comprehensive set of market rules that enable Aggregators to group individual facilities located on the transmission and/or distribution systems to form a single entity—an Aggregation—for the purpose of participating in the NYISO-administered Energy, Ancillary Services, and Installed Capacity markets. The Aggregation may collectively satisfy applicable minimum eligibility and performance requirements, which significantly enhances opportunities for both existing and new facilities to participate in the NYISO-administered markets, including facilities that cannot currently participate or cannot fully participate in the markets due to, among other things, their size, physical or operational characteristics, or commitments to the local distribution system or a host load.

The Commission accepted the NYISO's DER and Aggregation participation model on January 23, 2020, approving rules related to: (i) the eligibility, composition, and participation of Aggregations, including the inclusion of DER, (ii) Aggregation participation in the Energy and Ancillary Services markets, (iii) participation in both the wholesale markets and programs or markets operated to meet the need of distribution systems or host facilities, (iv) metering and telemetry requirements, (v) settlement of Aggregations, (vi) Aggregation participation in the NYISO-administered Installed Capacity market, (vii) interconnection requirements, and (viii) other tariff revisions required to account for the physical and operational characteristics of Aggregations and DER. The NYISO respectfully submits that, except as otherwise described in Part V of this filing letter, the tariff revisions accepted by the Commission in Docket No. ER19-2276-000, *et al.*, satisfy the requirements and directives of Order No. 2222. Parts IV.A through IV.G below describe the existing market rules that comply with Order No. 2222.

A. DER and DER Aggregator Definition

i. DER Definition

Order No. 2222 defines a distributed energy resource as "any resource located on the distribution system, any subsystem thereof, or behind a customer meter."[41] Distributed energy resources may be located both in front of and behind an end-use customer meter, are technology-neutral, and may include electric storage resources, intermittent generation, distributed generation, demand response, energy efficiency, thermal storage, and electric vehicles.[42]

The NYISO defines a Distributed Energy Resource as "(i) a facility comprising two or more Resource types behind a single point of interconnection with an Injection Limit of 20 MW or less; or (ii) a Demand Side Resource; or (iii) a Generator with an Injection Limit of 20 MW or less, that is electrically located in the NYCA."[43]

The NYISO's definition permits Generators (including electric storage resources, thermal storage, intermittent generation, distributed generation, and thermal generation) and Demand Side Resources to qualify as DER. A DER may also be a single facility that combines multiple resource types behind the same point of interconnection (for example, a facility that combines Demand Reduction capability with an electric storage resource behind the same point of interconnection).

The NYISO's participation model will allow DER located on the distribution system, a subsystem thereof, and the New York State Transmission System to participate in an Aggregation. So long as local reliability concerns are addressed, the NYISO does not believe that the point of interconnection should be a limiting factor for participation in an Aggregation. Including transmission-connected resources offers Aggregators the largest possible pool of resources from which to create an Aggregation.

ii. DER Aggregator Definition

Order No. 2222 defines a distributed energy resource aggregator as "the entity that aggregates one or more distributed energy resources for the purposes of participation in the capacity, energy, and/or ancillary service markets of the regional transmission organizations and/or independent system operators."[44]

[41] Order No. 2222 at P 114.

[42] *Id.* Noting that any resource that is technically capable of providing a wholesale service through an aggregation should be eligible to do so.

[43] Accepted Services Tariff Sec. 2.4.

[44] Order No. 2222 at P 118.

The NYISO similarly defines an Aggregator as a "Supplier that offers Capacity, Energy, and/or Ancillary Services for an Aggregation."[45] Under this definition, the Aggregator is the Market Participant (the "Supplier") offering the collective capability of DER into the NYISO-administered markets as an Aggregation.

B. DER Participation Model

Order No. 2222 requires each RTO/ISO to develop tariff provisions that allow distributed energy resource aggregations to participate directly in the RTO/ISO markets.[46] NYISO's DER and Aggregation participation model is such a model. Under the NYISO's model, heterogeneous and homogeneous aggregations will be able to participate in the NYISO's Energy, Ancillary Services, and Installed Capacity markets. Specific components of the NYISO's model that address the directives of Order No. 2222 are identified below. The NYISO also proposes certain additional tariff revisions to supplement its participation model in Part V.

i. Aggregation Participation Model – Eligibility to Provide Energy, Ancillary Services, and Installed Capacity

Order No. 2222 requires each RTO/ISO to develop one or more participation models that permit distributed energy resource aggregators to register distributed energy resource aggregations.[47] The participation models must account for and accommodate the physical and operational characteristics of the distributed energy resource aggregation.[48] The Commission allowed that an RTO/ISO may demonstrate compliance with this requirement by modifying existing models to facilitate the participation of distributed energy resource aggregations.[49]

The NYISO's DER and Aggregation participation model allows an Aggregator to combine individual facilities as a single unit—the Aggregation—to provide Energy, Ancillary Services, and Capacity in the NYISO-administered markets.[50] The Aggregator is the Market Participant that interfaces with the NYISO concerning the participation of the Aggregation.[51]

The Aggregation participates in the wholesale markets as a "Resource."[52] Aggregations may be heterogeneous or homogeneous, and the market rules that apply to a given Aggregation depend on its composition.[53]

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[45] Accepted Services Tariff Sec. 2.1.

[46] Order No. 2222 at P 129.

[47] *Id.* at P 130.

[48] *Id.*

[49] *Id.*

[50] Accepted Services Tariff Sec. 4.1.10.

[51] *Id.* at Sec. 2.1 (at definition of Aggregator).

[52] *Id.* (at definition of Aggregation).

[53] *Id.* at Sec. 4.1.10.1.

An Aggregation must satisfy minimum eligibility and performance requirements to qualify for wholesale market participation.[54] Except as otherwise noted (*e.g.*, provision of Operating Reserves), the individual facilities that make up an Aggregation will not each be required to meet these minimum requirements, except when the Aggregation is a "single resource Aggregation" as described in Part V.C.ii of this filing letter.[55]

Each Aggregation will be eligible to seek to qualify to provide Energy, Ancillary Services, and Installed Capacity. Depending on the Aggregation, the type and quantity of each service will be defined by the technical capability of the individual resources that comprise the Aggregation. For example, an Aggregation may only supply as much Unforced Capacity as the sum of the capability of the individual facilities in the Aggregation, accounting for each facility's CRIS, forced outage rate, Dependable Maximum Net Capability ("DMNC") test results, and other factors. Similarly, and as described in the June 27 Filing, an Aggregation may only qualify to offer the Ancillary Services that all individual facilities in the Aggregation are qualified to provide.[56]

a. Energy Market Participation

The NYISO's participation model for Aggregations provides that the Aggregation will not, regardless of its composition, receive a unit commitment from the NYISO.[57] Instead, it will operate as a dispatch-only Resource when participating in the NYISO-administered markets. The Aggregation will offer Energy using a fully dispatchable continuous bid curve that can represent the entire operating range of the Aggregation. This may include bids to withdraw Energy if the Aggregation contains at least one Withdrawal-Eligible Generator.[58]

Aggregations will be treated as always available for dispatch, consistent with their Bids. The NYISO will not require the submission of commitment parameters, nor will it evaluate those commitment parameters. First, the NYISO does not have the means to effectively economically optimize the starts and stops of individual facilities within an Aggregation, and will not have operational visibility of the electric system (*i.e.*, the distribution system) to which many of these resources will be interconnected. Second, the individual facilities that make up the Aggregation may have a primary function other than providing Energy and Ancillary Services to the NYISO-administered markets, and may already be operating to perform their primary function. Accordingly, the NYISO will treat Aggregations as dispatch-only and will not require or

[54] *Id.* at Sec. 4.1.10.

[55] *Id.* (as accepted/not modified).

[56] June 27 Filing at p 42; Accepted Services Tariff Sec. 4.2.1.3.1.

[57] Accepted Services Tariff Sec. 4.1.10.

[58] *Id.* at Sec. 4.1.10.1. The NYISO defined a Withdrawal-Eligible Generator as part of its Order No. 841 compliance filing as "[a] Generator that is eligible to withdraw energy from the grid at a price for the purposes of recharging or refilling for later injection back into the grid." An Energy Storage Resource is an example of a Withdrawal-Eligible Generator.

consider any commitment parameters, such as start-up time, in its market evaluation of Aggregations.

Because the NYISO will not be committing Aggregations, the NYISO's Commission-accepted revisions to Section 4.2.3 of the Services Tariff provide that for the Day-Ahead Market, the Day-Ahead Security Constrained Unit Commitment ("SCUC") software will treat Aggregations as available to be scheduled based on their Bids. Similarly, the NYISO revised Section 4.4.1.1 of the Services Tariff to provide that the Real-Time Commitment ("RTC") software for the Real-Time Market will treat Aggregations as available to be scheduled based on their Bids.

As Aggregations are dispatch-only, they are not eligible to submit Start-up Bids or to recover start-up costs. In its June 27 Filing the NYISO revised the definitions of Start-Up Period and Start-Up Bid such that the Start-Up Period for Aggregations shall be set to zero, and that Aggregators shall not submit a Start-Up Bid for an Aggregation.[59] The NYISO also revised the definition of Shutdown Period such that the Shutdown Period for Aggregations shall be zero.[60] Because Aggregations are required to operate using a fully dispatchable, continuous Bid curve across their entire operating range, they are not eligible to include Minimum Generation Bids with their offers. Accordingly, the NYISO revised the definition of Minimum Generation Bid and Minimum Generation Level to indicate that if a Supplier is an Aggregation, it shall not submit these commitment-related parameters.[61] The NYISO also made certain conforming revisions in its Services Tariff.[62]

Additional requirements and market rules applicable to DER and Aggregation participation in the Energy Market (*e.g.*, minimum offer size and compliance with Order No. 745) are described throughout this submittal in response to specific Order No. 2222 directives.

b. Ancillary Services

Aggregations will be eligible to qualify to provide Regulation Service and Operating Reserves. As discussed below, Aggregations will not be permitted to supply Voltage Support Service. The specific Ancillary Services each Aggregation may qualify to provide will depend on the individual facilities comprising the Aggregation.

[59] *See* accepted revisions to the Start-Up Period and Start-Up Bid definitions in Services Tariff Section 2.19 and accepted revisions to the Start-Up definition in OATT Section 1.19.

[60] Accepted revisions to the definition of Shutdown Period in Section 2.19 of the Services Tariff. The revisions to this definition made the same change for Behind-the-Meter Net Generation Resources and Energy Storage Resources. Both of those Resource types are dispatch-only and may not submit Shutdown Period information with their Bids.

[61] *See* accepted revisions to the Minimum Generation Bid and Minimum Generation Level definitions in Services Tariff Section 2.13 and OATT Section 1.13.

[62] *See* accepted revisions to Services Tariff Section 4.1.8.

1) Regulation Service

An Aggregation that contains one or more generating units is not eligible to provide Regulation Service unless each of the generating units in the Aggregation use inverter-based energy storage technology.[63] Regulation Service is provided by qualified Resources whose output or demand can be raised or lowered as necessary in six-second increments to follow changes in Load. Resources, with the exception of units using inverter-based energy storage technology, providing Regulation Service must, therefore, be synchronized to the grid and be capable of responding to six-second dispatch signals in both the up and down directions. When an Aggregation comprised of one or more generating units is dispatched, there is no certainty that the next increment of output will be provided by a unit that is currently online and synchronized to the system. For this reason, the NYISO's accepted rules limit regulation service to facilities that utilize inverter-based energy storage technology, which can respond instantly to dispatch instructions. Aggregations in which all generating units utilize inverter-based energy storage technology will be eligible to provide Regulation Service.

For the same reasons described above, an Aggregation of Demand Side Resources in which at least one Demand Side Resource facilitates its Demand Reduction by using a Local Generator will not be eligible to provide Regulation Service unless each Local Generator included in the Aggregation uses inverter-based energy storage technology.[64]

2) Operating Reserves

The NYISO procures three different Operating Reserves products: (i) Spinning Reserve (also known as 10-Minute Synchronized Reserve); (ii) 10-Minute Non-Synchronized Reserve; and (iii) 30-Minute Reserve (which includes both synchronized and non-synchronized components). An Aggregation's eligibility to provide a particular Operating Reserves product will be defined by the criteria for the particular product and the characteristics and operating status of the individual facilities in the Aggregation.[65]

Except as described below, an Aggregation may provide Spinning Reserve when it: (i) is Bid as ISO-Committed Flexible or Self-Committed Flexible; (ii) is operating within the dispatchable portion of its operating range; (iii) is capable of responding to NYISO instructions to change its operating level within ten minutes; and (iv) meets the qualifications identified in the ISO Procedures.[66] The following Aggregation types may only provide Spinning Reserves if all of the generating units in their Aggregation use inverter-based energy storage technology and they meet the criteria in the NYISO's procedures: (i) Aggregations comprised of one or more

[63] *Id.* at Secs. 4.2.1.3.1, 15.3.

[64] *Id.* at Sec. 15.3.

[65] Pursuant to Northeast Power Coordinating Council requirements, all offers to supply Operating Reserve must be sustainable for a minimum of one hour.

[66] Accepted Services Tariff Secs. 2.15, 15.4.1.2.1.

generating units, and (ii) Aggregations that include Demand Side Resource(s) where at least one Demand Side Resource facilitates its Demand Reduction by using a Local Generator.

An Aggregation may provide 10-Minute Non-Synchronized Reserve if it is comprised of generating units (including Local Generators facilitating Demand Reductions by Demand Side Resources) and is capable of increasing its supply level within ten minutes and meets the criteria in the NYISO's procedures.[67]

Except as described below, an Aggregation may provide 30-Minute synchronized reserve when it: (i) is offered as ISO-Committed Flexible or Self-Committed Flexible, and (ii) is operating within the dispatchable portion of its operating range. As described above for Spinning Reserves, an Aggregation may not provide 30-Minute synchronized reserve if it has one or more generating units in the Aggregation, unless all such generating units (including Local Generators facilitating Demand Reductions by Demand Side Resources) utilize inverter-based energy storage technology. An Aggregation whose facility mix includes one or more generating units (including Local Generators facilitating Demand Reductions by Demand Side Resources) is eligible to provide 30-Minute non-synchronous reserve.

Finally, the NYISO clarifies that Aggregations using the Self-Committed Fixed Bid mode are not eligible to provide any kind of Operating Reserve.[68] This is consistent with the current requirements for individual Generators that Bid in this manner.

3) Voltage Support Service

As explained in the June 27 Filing at page 45, Aggregations are primarily expected to be comprised of facilities connected to the distribution system. They are unlikely to provide measurable and beneficial voltage support to the Bulk Electric System because any reactive power provided on the distribution system will experience high losses due to motors, transformers, and impedance at the distribution level. Therefore, the NYISO prohibits Aggregations from providing Voltage Support Service.[69]

c. Installed Capacity

The DER and Aggregation participation model establishes specific eligibility, qualification, and participation rules for Distributed Energy Resources and Aggregations that seek to qualify and participate in the NYISO-administered Installed Capacity market. These rules are designed to ensure comparable treatment amongst the different types of Resources that are available to meet the Loss of Load Expectation Resource Adequacy criterion. The participation model includes tariff modifications that apply specifically to Distributed Energy Resources and/or Aggregations, but in some cases clarifies or otherwise modifies existing eligibility, qualification, and participation requirements for all Resources participating as

[67] *Id.* at Secs. 2.15, 15.4.1.2.2.

[68] *Id.* at Secs. 2.15, 15.4.1.2.4.

[69] *Id.* at Secs. 15.2.

Installed Capacity Suppliers.[70] For example, tariff language was modified or proposed that impacts existing eligibility, qualification, and participation requirements as well as the Installed Capacity payment structures that apply to Energy Limited Resources.[71] These Commission-accepted changes allow comparable treatment of all eligible Resources.

The DER and Aggregation participation model expressly created a new ruleset applicable to Aggregations participating in the NYISO-administered markets. A general eligibility rule for nearly all Resources seeking to qualify as Installed Capacity Suppliers, other than Responsible Interface Parties, is that they must be able to participate in the NYISO's Energy market and be able to respond to and perform in a manner consistent with the directions and control of the NYISO. As such, only Aggregations that satisfy all the proposed requirements found in Sections 2, 4, and 5 of the Services Tariff are eligible to participate as Installed Capacity Suppliers. Section 5.12.13 *et seq.* of the Services Tariff, as proposed in the June 27 Filing, addresses the qualification and participation rules for an Aggregation participating in the NYISO's Installed Capacity market. These rules are generally applicable to a DER Aggregation (*i.e.*, an Aggregation of one or more Demand Side Resources or an Aggregation of more than one Resource type), and to an Aggregation consisting of a single Resource type (*e.g.*, an Aggregation of Energy Storage Resources).

The June 27 Filing also included substantial changes to the NYISO's market rules applicable to Resources with Energy Duration Limitations that are not capable of operating for twenty-four hours each day. The Energy Duration Limitation rules that the Commission accepted and the NYISO implemented on March 1, 2021, are generally applicable and not limited to DER and Aggregations.

The foundational element of the NYISO's market design for Resources with an Energy Duration Limitation was to expand opportunities for participation in the Installed Capacity market, and value capacity for a Resource with an Energy Duration Limitation on the basis of its contribution to meeting resource adequacy. The NYISO modified Services Tariff Section 5.12.11.5 to describe the general requirements that are applicable to Installed Capacity Suppliers with Energy Duration Limitations, which will generally apply to Energy Storage Resources and Distributed Energy Resources. The language sets forth general rules that apply to Resources

[70] The June 27 Filing proposed many revisions to Section 5 of the Services Tariff that can be described as conforming changes that modify the tariff language that governs the participation of Installed Capacity Suppliers such as Generators with no Energy Duration Limitations, as well as the provisions the govern the participation of Responsible Interface Parties enrolling SCRs in the Installed Capacity market. These conforming changes, detailed in the June 27 Filing, are changes that modified the tariff language without impacting the substantive eligibility, qualification, and participation requirements, and performance expectations and penalties that are described in the Tariff. These conforming changes were intended to make the current Tariff requirements broadly and generally applicable to all Installed Capacity Suppliers. This includes general rules and requirements that will continue to be applicable to existing Resources and that will also broadly apply to the eligibility, qualification, and participation requirements for Distributed Energy Resources and Aggregations. The NYISO does not specify each of these Commission-accepted conforming changes in the instant filing for the sake of brevity, but will provide a supplemental filing detailing these modifications should the Commission find such filing is required to comply with Order No. 2222.

[71] *See, e.g.*, June 27 Filing at 89.

with Energy Duration Limitations that are comparable to rules that broadly apply to all Installed Capacity Suppliers. For example, the first sentence in the section sets forth the rule that certain injection based Resources with Energy Duration Limitations will be subject to Attachments X and S of the OATT, which requires that they obtain CRIS. This language also specifies the bidding requirements for all such Resources. An Installed Capacity Supplier with an Energy Duration Limitation must bid the Installed Capacity Equivalent of its Unforced Capacity sold into the Day-Ahead Market each day. The bidding must be done each day for the consecutive number of hours associated with its Energy Duration Limitation.[72] This section also specifies how these Resources shall Bid with respect to their Normal or Emergency Upper Operating Limits and that these Resources may be called upon to operate in real-time at levels that account for the Resource's specific energy limitations. These rules lay the foundation for comparable bid/schedule/notify requirements as well as comparable availability-based derating factor calculations that are conducted by the NYISO for all Installed Capacity Suppliers.

Finally, an Aggregation consisting of facilities that share the same Resource type can participate as an Installed Capacity Supplier, and will largely be treated under Section 5 of the Services Tariff as if it were an individual Resource of the relevant type, except as provided in Sections 5.12.13.1 and 5.12.13.2. For example, an Aggregation of Intermittent Power Resources that are solely comprised of solar energy facilities will be treated as if it were a solar energy facility, however, the individual facilities that comprise the Aggregation may switch to a different homogeneous Aggregation of solar energy facilities on a monthly basis.[73] Similarly, an Aggregation comprised solely of batteries will be treated as a single Energy Storage Resource. This rule helps maintain comparability among single Resource type Aggregations and stand-alone Resources of the same type so as not to unduly advantage any one participation model over another.

ii. Technology Neutral Model

Order No. 2222 directed that the participation model for distributed energy resource aggregations be technology neutral. That is, the model should permit any particular distributed energy resource technology to participate in a distributed energy resource aggregation and to provide all of the wholesale market services the technology is technically capable of providing.[74] To further reduce barriers to entry, the Commission also required RTOs and ISOs to allow different types of distributed energy resource technologies to participate in a single distributed energy resource aggregation—*i.e.*, to allow heterogeneous aggregations.[75] Finally, the

[72] An ESR that is a Resource with an Energy Duration Limitation is subject to certain additional rules that address its particular operating characteristics and capabilities. For example, an ESR that is a Resource with an Energy Duration Limitation will be required to submit Bids to withdraw Energy for each hour outside of the Peak Load Window. *See* Services Tariff Sec. 5.12.7.

[73] *See, e.g.*, accepted revisions to Section 5.8.1 of the Services Tariff (explaining the treatment of homogeneous Aggregations of wind units versus a DER Aggregation containing wind units).

[74] Order No. 2222 at P 141.

[75] *Id.* at P 142.

Commission clarified that the requirements of Order No. 745 apply to Demand Side Resources participating in heterogeneous Aggregations.[76]

d. Technical Eligibility to Participate in an Aggregation

The NYISO's DER and Aggregation participation model is technology neutral, and permits Demand Side Resources, Generators (including Energy Storage Resources, thermal Generators, and other Resource types), and combinations of technology types located at the same location to participate in an Aggregation. The model expands participation opportunities for facilities that are not eligible to participate in the wholesale markets (due to resource size, location, or individual capability, for example), and that were not fully capable of wholesale market participation (*e.g.*, Limited Energy Storage Resources).[77]

The NYISO also has other specific, narrowly-tailored, market rules for certain Resource types that address the technical capabilities of the Resource (*e.g.*, LESRs), the operation of the Resource (*e.g.*, municipally-owned generation), and specific Resource configurations (*e.g.*, Behind-The-Meter Net Generation ("BTM:NG") Resources). These participation models were developed over time to recognize specific traits, which the DER and Aggregation participation model is not designed to accommodate. Therefore, the NYISO's DER and Aggregation participation model will not permit facilities that utilize special market rules for Generators with Public Utility Regulatory Policies Act ("PURPA") contracts, Limited Control Run-of-River Resources, BTM:NG Resources, Municipally-Owned Generation, System Resources, and Control Area System Resources to participate in an Aggregation utilizing those special market rules. To the extent that a Resource qualifies to use one of the identified participation models but chooses not to utilize that participation model, it may seek to qualify to participate in an Aggregation.

a. Heterogeneous Aggregations

The DER and Aggregation participation model provides for both homogeneous Aggregations and heterogeneous Aggregations. A homogeneous Aggregation that is composed entirely of a single Resource type (*e.g.*, each facility in the Aggregation is an ESR), with the exception of Demand Side Resources, will be subject to the existing rules for that particular Resource type, along with the general rules that apply to all Aggregations.[78] This approach provides Market Participants with the ability to aggregate facilities, while ensuring that the

[76] *Id.* at P 145.

[77] Limited Energy Storage Resources ("LESRs") are Generators characterized by limited Energy storage, with the inability to sustain continuous operation at maximum Energy withdrawal or maximum Energy injection for a minimum period of one hour. A LESR operating on a stand-alone basis is only authorized to provide Regulation Service in the NYISO-administered markets. When included in an Aggregation, however, the LESR combined with other facilities in the Aggregation may seek to qualify to provide Energy, capacity, and Ancillary Services.

[78] Accepted Services Tariff Sec. 4.1.10.1. An Aggregation of (i) Intermittent Power Resources, (ii) Energy Limited Resources, (iii) Capacity Limited Resources, and (iv) Limited Energy Storage Resources will only be considered a "single Resource type" when each facility in the Aggregation has the same intermittent, Energy limiting, or capacity limiting characteristics. *Id.*

market rules applicable to specific Resource types continue to apply. A heterogeneous Aggregation, defined in the NYISO's tariff as a DER Aggregation, is an Aggregation that includes (i) more than one Resource type, or (ii) only Demand Side Resources.[79] A DER Aggregation is a subset of Aggregations that is subject to the general rules for Aggregations and certain DER Aggregation-specific rules. For example, an Aggregation that includes an Energy Storage Resource and a Demand Side Resource will be a DER Aggregation, as will an Aggregation of Energy Limited Resources with different Energy Limiting characteristics (*e.g.*, a gas turbine with an air permit restriction, and a pumped storage facility).

b. Application of Order No. 745

On March 15, 2011, and as refined in subsequent orders, the Commission promulgated a set of rules related to the compensation of demand response resources participating in wholesale energy markets administered by ISOs and RTOs ("Order No. 745").[80] Order No. 745 provides that when a demand response resource participating in the ISO/RTO-administered energy market can balance supply and demand as an alternative to generation, and when dispatch of the demand response resource is cost-effective as determined by a net benefits test, the demand response resource must be compensated for its demand reduction in the energy market at the locational marginal price.[81] To implement this compensation approach, Order No. 745 established requirements for a net benefits test, required the review and modification (if necessary) of measurement and verification procedures, and required a method for allocating the costs of demand response payments among the Loads that benefit from the resources being scheduled to perform demand reductions.[82]

The NYISO's DER and Aggregation participation model maintains compliance with Order No. 745 for Aggregations that include Demand Side Resources. An Aggregation that includes Demand Side Resources will not be required to declare in its Day-Ahead or Real-Time Market Bids what portion of its offer constitutes Demand Reductions. Instead, the NYISO will evaluate each Aggregation's performance (via telemetry and revenue-quality meter data) after the fact to establish compliance with Order No. 745. To effectuate the Order No. 745 requirement that Demand Reductions be compensated at the LBMP when (i) a demand response resource participating in the NYISO-administered Energy market can balance supply and demand as an alternative to generation, and (ii) the dispatch of the demand response resource is cost-effective as determined by the Net Benefits Test,[83] the NYISO will evaluate an

[79] *Id.* at Sec. 2.4 (at definition of DER Aggregation).

[80] *Demand Response Compensation in Organized Wholesale Energy Markets*, Order No. 745, FERC Stats. & Regs. ¶ 31,322 ("Order No. 745"), *order on reh'g and clarification*, Order No. 745-A, 137 FERC ¶ 61,215 (2011), *reh'g denied*, Order No. 745-B, 138 FERC ¶ 61,148 (2012), *vacated sub nom. Elec. Power Supply Ass'n v. FERC*, 753 F.3d 216 (D.C. Cir. 2014), *rev'd & remanded sub nom. FERC v. Elec. Power Supply Ass'n*, 136 S.Ct. 760 760 (2016).

[81] Order No. 745 at P 2.

[82] *Id.* at P 4-6.

[83] *Id.* at P 47.

Aggregation's Actual Demand Reductions against the Monthly Net Benefit Threshold[84] after the fact, and will compensate Demand Reductions only when the Real-Time LBMP meets or exceeds the Monthly Net Benefit Threshold.[85] If the Real-Time LBMP does not meet or exceed the Monthly Net Benefit Threshold, Demand Reductions provided by a DER Aggregation will not be compensated.[86]

iii. Aggregation Size Requirements

Order No. 2222 directed RTOs and ISOs to implement a minimum size requirement of no greater than 100 kW for distributed energy resource aggregations.[87] The Commission stated that adopting a 100 kW minimum size requirement will "remove a barrier to distributed energy resource aggregations, improve competition in RTO/ISO markets, avoid confusion about appropriate requirements, and help ensure just and reasonable rates."[88]

The NYISO's DER and Aggregation participation model requires that each transaction offered in the Energy, Ancillary Services, and Installed Capacity markets on behalf of an Aggregation have a minimum offer of 100 kW.[89] The NYISO agrees with the Commission that a 100 kW minimum offer requirement will reduce a barrier to entry for small Resources.

If an Aggregation offers a combination of Energy injections, Energy withdrawals, and/or Demand Reductions, however, the Aggregation must offer the minimum offer level of 100 kW for each response type.[90] This requirement is necessary because the NYISO will separately process Energy injections, Energy withdrawals, and Demand Reductions (for the purposes of meeting Order No. 745 requirements) in the settlements evaluation, and because 100 kW is currently the smallest common increment used throughout the NYISO's various bidding, scheduling, billing, and settlement software.

iv. Minimum and Maximum Capacity Requirements for Distributed Energy Resources Participating in an Aggregation

The Commission declined to establish a minimum or maximum capacity requirement for individual distributed energy resources participating in the wholesale markets in an Aggregation. Instead, Order No. 2222 directed each RTO/ISO to propose a maximum capacity requirement for individual facilities participating in an aggregation, or, in the alternative, explain why a maximum capacity requirement is not necessary.

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[84] *See* Accepted Services Tariff Sec. 2.13 (revising current definition of "Monthly Net Benefit Offer Floor").

[85] *Id.* at Sec. 4.5.7.2.

[86] *Id.* Demand Reductions that are not compensable pursuant to Order No. 745 will nonetheless be included in the NYISO's evaluation of whether the Aggregation achieved its NYISO-issued Base Point Signal.

[87] Order No. 2222 at P 171.

[88] *Id.* at P 173.

[89] Accepted Services Tariff Sec. 4.1.4.

[90] *Id.* at Sec. 4.1.10.

The NYISO's DER and Aggregation participation model sets a maximum 20 MW Injection Limit[91] for Resources participating in an Aggregation.[92] As described in the NYISO's June 27 Filing[93] and in comments made in Docket No. RM16-23,[94] adopting a maximum size for individual facilities participating in an Aggregation permits the NYISO to independently model, schedule, and settle large facilities on a stand-alone basis, providing the NYISO's grid operators better operational awareness and control that may be needed to address system conditions. The maximum physical injection capability of a Resource will be measured as its nameplate capacity, unless the facility (or Aggregator) demonstrates to the NYISO (and, where appropriate, the local utility) that it has sufficient physical protections and/or control schemes to limit the injection capability of a larger facility to 20 MW or less.[95]

C. Locational Requirements

Order No. 2222 requires RTOs/ISOs to establish locational requirements for distributed energy resources participating in a distributed energy resource aggregation. The Order gives each RTO/ISO flexibility to develop appropriate locational requirements, so long as those requirements are as geographically broad as is technically feasible.[96]

The NYISO's DER and Aggregation participation model requires that each individual facility within an Aggregation be electrically located in the NYCA, and electrically connected to the same NYISO-identified Transmission Node.[97] The NYISO will identify Transmission Nodes throughout the NYCA, following consultation with the New York Transmission Owners, and will map the collection of electrical facilities (*e.g.*, distribution feeder lines) associated with the Transmission Node to which individual facilities may aggregate.[98] The process for identifying Transmission Nodes and mapping electrical facilities to Transmission Nodes first considers a broad set of electrical facilities for each Transmission Node, and then, if necessary, the set of electrical facilities is reduced for the Transmission Node until the NYISO and applicable

[91] The NYISO defines "Injection Limit" in accepted Services Tariff Sec. 2.9 as: "[t]he maximum injection of BTM:NG Resources and Distributed Energy Resources, in MW, into the NYS Transmission System or distribution system at the BTM:NG Resource's Point of Injection or Distributed Energy Resource's point of interconnection."

[92] Accepted Services Tariff Sec. 4.1.10.1. The NYISO's DER and Aggregation participation model does not establish a maximum size for individual Demand Side Resources participating in an Aggregation.

[93] June 27 Filing at n. 49.

[94] Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, Comments of the New York Independent System Operator, Inc., Docket No. RM16-23-000, *et al.*, at 15 (Feb. 13, 2017).

[95] Accepted Services Tariff Sec. 4.1.10.1.

[96] Order No. 2222 at P 204.

[97] A "Transmission Node" is defined as "[a] bus located inside the NYCA that is identified by the ISO to represent an electrical area to which individual Distributed Energy Resources may aggregate and at which LBMPs are calculated." Accepted Services Tariff Sec. 2.20.

[98] *Id.* at Sec. 4.1.10.2.

Transmission Owner agree that the Transmission Node appropriately reflects the electrical conditions on the system.

The NYISO's approach to identifying Transmission Nodes is best thought of as a hybrid approach, and seeks to maximize the area of the distribution system covered, while minimizing bulk power system concerns. The model recognizes that the electrical conditions of certain parts of the NYCA system experience greater congestion or other system conditions and require a more targeted management approach. The NYISO's Transmission Node identification procedures will provide for the electrical footprint of each Transmission Node to be as large as possible while accounting for the efficiency of the NYISO-administered markets and the reliability of the system.

The NYISO will identify each Transmission Node on its public website alongside the list of Generator Names, Load Names, and other general system information.[99] This will provide transparency to Market Participants and other parties interested in developing Aggregations. The NYISO will also review the set of Transmission Nodes on an annual basis and update the set of Transmission Nodes, if necessary, to account for changing conditions on the New York State Transmission System and underlying distribution systems.[100] The annual review process will allow the NYISO to respond to changing system conditions resulting from increased penetration of DER and ESR while also providing Market Participants with certainty that the Transmission Nodes will not change within a Capability Year. If the NYISO determines changes are necessary to the set of Transmission Nodes, it will post a notice on its website of those changes at least 90 days prior to the start of a Capability Year (*i.e.*, at least 90 days prior to May 1), which changes will take effect on the first day of that Capability Year.[101] Prior to the start of the applicable Capability Year, Aggregators must certify to the NYISO, in accordance with ISO Procedures, that their Aggregations affected by changes to the Transmission Nodes continue to meet all of the applicable electrical location requirements.[102] Aggregator certification is necessary to ensure the NYISO can accurately represent the Aggregation to system operators.

The NYISO will not limit the total number of Aggregations permitted at a single Transmission Node, and will allow one or more Aggregators to enroll one or more Aggregations at the same Transmission Node.[103] This will provide flexibility to create Aggregations in a manner that best suits the Aggregator's and customers' needs, and the capability of individual facilities.

Modeling facilities that participate in an Aggregation at a Transmission Node that is close to their electrical location will enable the NYISO to manage transmission constraints and

[99] *Id.* at Sec. 4.1.10.2. The Transmission Nodes will be located under "General Information" at https://www.nyiso.com/reports-information.

[100] Accepted Services Tariff Sec. 4.1.10.2.

[101] *Id.*

[102] *Id.*

[103] *Id.*

reliability concerns, thereby resulting in lower overall production cost. It also encourages location-specific development of DER in areas where additional supply is beneficial. Settling Aggregations at the individual Transmission Node LBMP, rather than at a zonal average LBMP, will encourage DER to locate where they will improve grid reliability while also benefitting customers.[104] The NYISO believes that these factors, combined with the flexible approach to identifying Transmission Nodes, provides the greatest opportunity to Aggregators and individual facilities while meeting the needs of the NYS Transmission System.

D. Distribution Factors and Bidding Parameters

Order No. 2222 requires each RTO/ISO to establish market rules that address distribution factors and bidding requirements for distributed energy resource aggregations.[105] Specifically, where an RTO/ISO utilizes multi-node aggregations, it must "(1) require that distributed energy resource aggregators give to the RTO/ISO the total distributed energy resource aggregation response that would be provided from each pricing node …; and (2) incorporate appropriate bidding parameters into its participation models as necessary to account for the physical and operational characteristics of distributed energy resource aggregations."[106] Appropriate bidding parameters that address the physical and operational characteristics of distributed energy resource aggregations must be included with one or more new participation models for such aggregations, or the RTO/ISO may adjust the bidding parameters of existing participation models to account for the physical and operational characteristics of distributed energy resource aggregations.

i. Distribution Factors

As described in Part IV.C, the NYISO developed its DER and Aggregation participation model such that the collective capability of the individual Resources participating in an Aggregation are represented at a NYISO-specified Transmission Node. The NYISO and its stakeholders developed this design, in part, to help maintain transmission security, which is particularly important in New York, considering the highly constrained transmission grid.

Distribution factors are typically used when the individual resources in an aggregation are located at multiple bulk power system nodes, and allow the grid operator to approximate where on the system to expect an aggregation's energy injections, energy withdrawals, and demand reductions. Since the NYISO will model an Aggregation at a single Transmission Node, the Aggregation will not be required to provide distribution factors, because NYISO grid operators know where on the Transmission System to expect an Aggregation's response.

[104] Scheduling and settling resources that could qualify to participate using a stand-alone participation model at its actual electrical location would provide more accurate Energy and Ancillary Services market participation incentives than using Transmission Nodes.

[105] Order No. 2222 at P 225.

[106] *Id.*

The NYISO's model will schedule, price, and settle Aggregation Energy injections and/or Energy withdrawals from a specific location on the grid. This will allow the NYISO to understand projected transmission flows, and avoid circumstances where an Aggregation is unable to inject or withdraw Energy that perfectly conforms to a stated distribution factor. It also allows the NYISO to avoid potentially compromising grid reliability by correcting for projected transmission flows that are not realized.

ii. Bidding Parameters

As described in Part IV.B.i, an Aggregation will be offered into the NYISO-administered markets as a single unit, and the bidding and offer obligations will apply to the Aggregator or Aggregation, not to the individual facilities within the Aggregation (except for a single Resource Aggregation, in which case the sole Resource and Aggregation are functionally one and the same). The vast majority of the NYISO's current bidding and scheduling constructs will apply to Aggregations in the same manner as they currently apply to Generators.[107] However, the NYISO has developed certain additional market rules to address the physical and operational characteristics of DER Aggregations.[108] The particular services that an Aggregation may provide, and therefore the specific bidding parameters that apply, will depend on the individual facilities in the Aggregation and the Aggregation's ability to meet the applicable bidding requirements.

A single Resource-type Aggregation will utilize the bidding parameters for the specific Resource type (*e.g.*, an Aggregation of only ESRs will utilize the ESR participation model bidding parameters).

A DER Aggregation may submit Bids representing its entire operating range, including Bids to withdraw Energy if the DER Aggregation contains at least one Withdrawal-Eligible Generator. The bidding requirements for a DER Aggregation containing at least one Withdrawal-Eligible Generator address situations where one or more Withdrawal-Eligible Generator(s) in a DER Aggregation seeks to refill or recharge in an interval in which the DER Aggregation also seeks to provide Energy (*i.e.*, Energy injections or Demand Reductions). In this situation, the Bid for the Aggregation should reduce its offered supply by the amount of Energy it seeks to withdraw.[109] Conversely, if the Energy withdrawals by a Withdrawal-Eligible Generator will be greater than the Energy supplied, the Bid for the Aggregation should reduce its offered withdrawals by the amount of Energy it intends to supply.

The Commission-accepted revisions to Services Tariff Sections 4.2.1.3.1 and 4.2.1.4 require that when an Energy market Bid for a DER Aggregation incorporates both Energy supply and Energy withdrawals, each point of the DER Aggregation's Bid Curve (or, for a Self-Committed Fixed Bid, the DER Aggregation's Bid) shall reflect the net offer, such that any expected Energy withdrawals reduce the Energy that the Aggregation is capable of supplying.

[107] *See, e.g.,* Accepted Services Tariff Secs. 4.2.1.3.3, 4.2.1.3.4, and 4.2.1.4.

[108] *Id.* at Secs. 4.2.1.3.1, 4.2.1.4.

[109] *Id.* at Sec. 4.1.10.1.

The NYISO also revised the bidding rules in Services Tariff Section 4.2.1.3.1 for Suppliers using the ISO-Committed Flexible, Self-Committed Flexible, or ISO-Committed Fixed Bid modes to provide that a Supplier's hourly Day-Ahead Bids for a DER Aggregation to withdraw Energy and to inject Energy shall be submitted as a single continuous bid curve representing the Capacity, in MW, available for each hour of the Dispatch Day.[110] The NYISO also revised the bidding rules in Services Tariff Section 4.2.1.4 for Suppliers using the Self-Committed Bid Mode for its Day-Ahead Bids to accommodate Aggregations, requiring the Bids to reflect the net-offer, as described above.[111] Similar rules in Services Tariff Section 4.4.1.2 apply to Real-Time Market Self-Committed Flexible and Self-Committed Fixed Bid requirements.

The NYISO made only minor revisions to its tariffs to address specific bidding parameters for Aggregations in its June 27 Filing. In Services Tariff Section 4.2.1.3.3 the NYISO clarified that Aggregations containing at least one Withdrawal-Eligible Generator must specify the Lower Operating Limit for each hour, and in Services Tariff Section 4.2.1.3.4 specified that single Resource type Aggregations of ESRs are required to utilize the same Bid parameters that are applicable to ESRs.[112]

E. Information and Data Requirements

Order No. 2222 requires each RTO/ISO to: (i) identify in its tariffs all the information and data that distributed energy resource aggregators must provide about the physical and

[110] ISO-Committed Fixed, ISO-Committed Flexible, Self-Committed Fixed, and Self-Committed Flexible are bidding modes defined in the Services Tariff. Both ISO-Committed Fixed and ISO-Committed Flexible bidding modes require the NYISO to evaluate economic Bids prior to scheduling resources. ISO-Committed Fixed is a bidding mode in which a Generator requests that the NYISO commit and schedule it in the Day-Ahead Market. In the Real-Time Market, it is a bidding mode in which a Generator, with NYISO approval, requests that the NYISO schedule it no more frequently than every 15 minutes. ISO-Committed Flexible is a bidding mode in which a Dispatchable Generator or Demand Side Resource is committed by and follows Base Point Signals issued by the NYISO. *See* Services Tariff Section 2.9. With Self-Committed Fixed and Self-Committed Flexible bidding modes, resources can self-schedule (or self-commit) their output regardless of the LBMP. Self-Committed Fixed is a bidding mode in which a Generator is self-committed and opts not to be Dispatchable over any portion of its operating range. Self-Committed Flexible is a bidding mode in which a Dispatchable Generator self-commits to a specified output level, but is also made available to follow NYISO-issued Base Point Signals within a portion of its operating range. *See* Services Tariff Section 2.19.

[111] "A Supplier may submit a Day-Ahead Market Self-Committed Fixed Bid for a DER Aggregation to withdraw Energy if the DER Aggregation includes at least one Withdrawal-Eligible Generator. When a Self-Committed Fixed Bid for a DER Aggregation reflects both Energy supply and Energy withdrawals by a Withdrawal-Eligible Generator that is a component of the Aggregation, the DER Aggregation's Bid shall reflect the net offer, such that any Energy withdrawals reduce the Energy the DER Aggregation is capable of supplying." Accepted Services Tariff Section 4.2.1.4.

[112] *See, e.g.,* Services Tariff Sections 2.2 (definition of "Beginning Energy Level"), 2.5 (definitions of "Energy Level" and "Energy Level Management"), 2.9 (definition of "ISO-Managed Energy Level"), 2.12 (definitions of "Lower Operating Limit" and "Lower Storage Limit"), 2.14 (definition of "Normal Upper Operating Level") 2.18 (definition of "Roundtrip Efficiency"), 2.19 (definition of "Self-Managed Energy Level"), 2.21 (definition of "Upper Storage Limit"), 4.2.1.3.4, and 4.4.2.1.

operational characteristics of its aggregation; (ii) require aggregators to provide a list of individual resources in its aggregation; and (iii) establish all necessary information that must be submitted for individual distributed energy resources.[113] The Commission further requires RTOs and ISOs to revise their tariffs to require aggregators to provide aggregate settlement data for their aggregations, and to retain performance data for individual distributed energy resources for auditing purposes.

The June 27 Filing required that each Aggregator (i) comply with the registration requirements set forth in the NYISO Tariffs and ISO Procedures; (ii) designate one or more persons to receive ISO Communications; and (iii) comply with the metering requirements set forth in Services Tariff Section 13 and the associated ISO Procedures.[114] These requirements are similar to the requirements for all Market Participants.

The Aggregator will also be responsible for registering Aggregations with the NYISO and enrolling the individual facilities in each Aggregation in accordance with ISO Procedures. The NYISO stated in the June 27 Filing that it would provide those processes and procedures to stakeholders prior to implementing the new rules for Aggregations.[115] In the time since the Commission accepted the NYISO's June 27 Filing, the NYISO has worked diligently to identify the specific information and data necessary to register an Aggregation and enroll individual resources. The information provided in response to the individual directives below has not yet been finalized and presented to NYISO stakeholders. However, once the NYISO completes the development of its new Aggregation management software and related systems, and is able to finalize the list of attributes necessary to register an Aggregation and enroll individual DER, it will provide that information to stakeholders. The NYISO will develop a new business practice manual that exclusively addresses participation of Aggregations in the NYISO-administered markets.

The NYISO's proposal related to Aggregation and individual resource information and data requirements is consistent with the requirements for other Resources participating in the NYISO's markets. The NYISO's tariffs do not generally specify Resource registration and data requirements. Instead, these data requirements are often contained in the applicable Market Participant registration materials (that must be submitted prior to a Resource being authorized to participate in the market) and the various business practice manuals and user guides applicable to particular resource types and software systems.

The procedures for enrolling Aggregations and individual facilities in the NYISO's Special Case Resource ("SCR") program is instructive. Services Tariff Section 5.12.11.1 and ICAP Manual Section 4.12 describe the general requirements for participation in the SCR

[113] Order No. 2222 at P 236.

[114] June 27 Filing at 27. As with all other NYISO Customers, an Aggregator will have to execute service agreements for the OATT and Services Tariff, to satisfy the existing customer registration requirements, register their Aggregations, and enroll individual facilities in accordance with ISO Procedures.

[115] June 27 Filing at 27.

program.[116] The specific information and data that a Market Participant is required to provide for each SCR Aggregation and individual SCR is identified, in detail, in the Demand Response Information System ("DRIS") User Guide. That User Guide identifies these data points in a series of figures that, for example, include columns for the software application field name, field format, description of the requirement and who must provide the information, and data import information.[117]

i. Physical and Operational Characteristics of the Aggregation

Each Aggregation will be identified by a specific identification number and name. The NYISO will also identify each Aggregation's type (*i.e.*, DER Aggregation or single resource type Aggregation). The NYISO will also collect Aggregation-specific data for each Aggregation. For example, the NYISO will collect information on the location of the Aggregation including the NYISO Load Zone, subzone, and Transmission Node. The Aggregator will need to identify metering information such as the Meter Authority that will be serving the Aggregation, whether the Aggregation will be utilizing alternate telemetry schemes (where authorized by the Services Tariff), whether the Aggregation will be communicating directly to the NYISO or through the applicable Transmission Owner, and the communication protocol utilized by the Aggregator.

The NYISO will also require data related to the capability of the Aggregation, including its Upper Operating Limit and the amount of Energy Injections, Energy Withdrawals, and Demand Reduction capability available in the Summer and Winter Capability Periods. Aggregation-specific information also includes the wholesale market services an Aggregation is qualified to provide, and whether the Aggregation has individual facilities that engage in Dual Participation with programs operated by a Distribution Utility.

As described above the NYISO continues to develop the various use cases and requirements for Aggregations participating in the wholesale markets. This section of the filing letter provides an overview of the types of information that will be required for each Aggregation. It is not a complete list of the information that will be required.

ii. List of Individual Resources in the Aggregation

An Aggregator must identify each individual resource participating in its Aggregation. This requirement helps the NYISO validate the composite characteristics and capability of the Resources, confirm that the facilities have the appropriate authorizations to provide wholesale market services (*e.g.*, for a customer of a "small utility," that the RERRA has "opted-in"), and

[116] *See, e.g.,* Services Tariff Sec. 5.12.11.1 ("Responsible Interface Parties must provide [Local Generator] data in accordance with the ISO Procedures…."); ICAP Manual Sec. 4.12.2 ("SCRs that participate with a Local Generator must enroll as either response type B or response type G resources, as defined in the *NYISO DRIS User's Guide*…."; DRIS User Guide Fig. 73 (Rules Specific to Resource Data in SCR Enrollment Files) (identifying the DRIS data required to enroll a SCR that utilizes a Local Generator to facilitate Demand Reductions from the grid).

[117] *See* Demand Response Information System User Guide Fig. 73 (Rules Specific to Resource Data in SCR Enrollment Files), *available at* https://www.nyiso.com/documents/20142/3625950/DRIS_UG.pdf.

permits the NYISO to verify that the individual facilities are not participating in another Aggregation.

The June 27 Filing noted that Aggregators will be responsible for enrolling the individual facilities in accordance with ISO Procedures. As described in Part IV.E, the Aggregator will be obligated to provide specific data regarding each individual facility. In order to clarify the Aggregator's obligation to identify each individual resource that it enrolls in an Aggregation, the NYISO proposes to modify Services Tariff Section 4.1.10.1 to state that "[a]n Aggregator must identify each individual facility in an Aggregation in accordance with the ISO Procedures."[118]

iii. Information on Individual Resources

Each individual facility will be identified by a specific identification number and name, and will be associated with a specific Transmission Owner account number. The NYISO will collect physical address information about the facility, including its address, city, state, and zip code.

The NYISO will associate the individual facility with the Aggregation identification number for the Aggregation in which it participates. The NYISO will use the information it collects to validate that the facility is appropriately included in a particular Aggregation.

The NYISO will also require facility-specific data related to its capability, including the facility's Upper Operating Limit, the type(s) of response capability (Energy injections, Energy withdrawals, Demand Reductions), and quantity of each. Facility-specific information will also include whether it engages in Dual Participation in the NYISO-administered markets and programs operated by a Distribution Utility.

The NYISO will also collect information on the interconnection of the facility, including its interconnection type, and its ERIS and CRIS values. If the facility is a Generator, the NYISO will identify the Generator sub-type (*e.g.*, Energy Limited Resource, Limited Energy Storage Resource), and gather information regarding the facility's fuel type, nameplate rating and other Generator-specific data. The information obtained for each Generator sub-type will vary (*e.g.*, the NYISO will collect information regarding an ESR's Storage Limits and round-trip efficiency that is not applicable to other resource types).

The NYISO continues to develop the various use cases and attendant requirements for individual facilities participating in an Aggregation. The information described above is not a complete list of the information that will be required.

iv. Aggregated Settlement Data

Under the NYISO's participation model, all Bids, schedules, dispatch and settlement will occur at the Aggregation level. Aggregations will need to meet the metering and telemetry

[118] Proposed revision to accepted Services Tariff Section 4.1.10.1.

standards applicable to Generators, including providing six-second telemetry data.[119] The NYISO's rules align the metering and telemetry standards for Generators and Aggregations, and will provide the NYISO with both the real-time operational data and after-the-fact settlement data needed to ensure Aggregations are responding to NYISO direction and are accurately settled. As described in Part IV.F of this filing letter, the NYISO will require Aggregations to provide separate settlement data that will permit the NYISO to evaluate and settle Energy injections, Energy withdrawals, and Demand Reductions.[120] This treatment will allow the NYISO to price Energy injections and Demand Reductions (positive values) and Energy withdrawals (negative values) at the appropriate Transmission Node-specific time-weighted LBMP. Although each response type will be processed separately, the NYISO will re-combine the components of the aggregate response and settle the Aggregation as a whole.

Services Tariff Section 10 addresses the NYISO's ability to audit meter data. Under those rules, a Customer (including an Aggregator) is required to keep a complete and accurate record of service taken or provided under the ISO Services Tariff, including meter readings.[121] Settlement information must be kept for at least twenty-four (24) months from the date that the settlement information was provided to the ISO.[122]

F. Metering and Telemetry Requirements

Order No. 2222 requires each RTO/ISO to establish market rules that address metering and telemetry hardware and software for distributed energy resource aggregations, but does not specify the metering and telemetry requirements each RTO/ISO must use.[123] Instead, Order No. 2222 directs RTOs and ISOs to develop metering and telemetry requirements that meet the needs of distributed energy resource aggregations in their regions, and explain in their compliance filings why those requirements are just and reasonable, and do not pose unnecessary and undue barriers to individual distributed energy resources participating in an aggregation.[124]

The NYISO's June 27 Filing proposed significant modifications to its metering and telemetry rules that addressed both Demand Side Resource participation and participation of Distributed Energy Resources and Aggregations. These rules are necessary to implement effective measurement and verification requirements to review Resources' responses and performance in real-time, and provide appropriate compensation. The NYISO's Commission-accepted metering and telemetry requirements are the result of an extensive effort to evaluate the then-existing metering and telemetry requirements for Generators and Demand Side Resources, and modify those as necessary to reduce costs and lower barriers to entry for advanced technologies.

[119] Accepted Services Tariff Sec. 13.2.

[120] *Id*. at Sec. 4.1.10.4.

[121] Services Tariff Sec. 10.

[122] *Id*.

[123] Order No. 2222 at P 262-3.

[124] *Id.* at P 263-4.

Under the NYISO's DER and Aggregation participation model, the NYISO will send real-time Base Point Signals to, and receive real-time telemetry from, the Aggregation; not from the individual facilities that participate in the Aggregation.[125] The NYISO will also collect revenue-quality meter data from the Aggregation, rather than from the individual facilities, for settlement purposes.[126] Aggregators are required to provide accurate telemetry and meter data to the NYISO.[127] Communicating with the Aggregation, rather than the individual facilities, will reduce the real-time and after-the-fact administrative burden on the NYISO, Aggregators, and individual facilities. It is also consistent with the participation model's bidding and settlement rules, which treat the Aggregation as a singular Resource.

Consistent with the rules for Generators, Aggregations will be required to send telemetry signals 24 hours a day, seven days a week, nominally on a six (6) second basis.[128] The Aggregator will be responsible for measuring the injection, withdrawal, and load reduction of all individual facilities in the Aggregation during dispatch.[129] The Aggregator must measure the injection, withdrawal, and load reduction of all individual facilities in the Aggregation, without regard to the resources it directs to operate, in order to achieve the NYISO dispatch. The six-second telemetry requirement is the same as the requirement for Generators. The requirement is crucial for the NYISO to maintain the reliability of the New York Bulk Power System, it provides essential two-way communications of operational data between the Aggregation and the NYISO. The NYISO relies on telemetry data for the situational awareness necessary to balance supply and demand within the NYCA and to identify and respond to normal and abnormal conditions.

Aggregators will be required to provide the NYISO with multiple streams of telemetry and revenue quality meter data for DER Aggregations. Real-time telemetry for each DER Aggregation will consist of three parts: (i) the net of Energy injections and Energy withdrawals (when the Aggregation contains at least one Withdrawal-Eligible Generator), (ii) Demand Reductions, and (iii) the sum of both (i) and (ii).[130] In addition, an Aggregator of a DER Aggregation will provide three streams of after-the-fact revenue-quality meter data: (i) Energy injections, (ii) Energy withdrawals by Withdrawal-Eligible Generators, and (iii) Demand Reductions.[131] The NYISO requires this information for measuring both performance and settlements. Specifically, the NYISO requires the individual signals to pair with the different revenue-grade meter files that are submitted one day after dispatch.

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[125] Accepted Services Tariff Sec. 4.1.10.4.

[126] *Id.*

[127] Accepted Services Tariff Sec. 13.2.

[128] *Id.*

[129] *Id.*at Sec. 4.1.10.4.

[130] *Id.*

[131] *Id.*

Single resource type Aggregations will be subject to the existing metering and telemetry rules for that particular Resource type. For example, an Aggregation comprised of exclusively ESRs will be subject to the specific Services Tariff Section 13.2.4 metering requirements applicable to ESRs. These ESR-specific rules require that Energy injections and Energy withdrawals of each ESR in an Aggregation must be directly metered, and the hourly meter data must be reported as two separate components (Energy injections and Energy withdrawals). A single resource type Aggregation will, like other Aggregations, provide the NYISO with composite meter data for the entire Aggregation.

The Aggregator will be responsible for ensuring that all measurements for metering and telemetry for the individual facilities it represents derive from either directly measured or calculated values, or a combination thereof, and meet the requirements set forth in the NYISO's Direct Communications Procedure, and the Control Center Requirements, Accounting and Billing, and Revenue Metering Requirements Manuals, as well as the Meter Services Manual, when applicable.[132]

G. Modification to List of Resources in Aggregation

Order No. 2222 requires each RTO/ISO to establish market rules that address an Aggregator's ability to modify the list of resources in a distributed energy resource aggregation.[133] Specifically, the Order directs each RTO/ISO to revise its tariff to "specify that distributed energy resource aggregators must update their lists of distributed energy resources in each aggregation (*i.e.*, reflect additions and subtractions from the list) and any associated information and data, but that, when doing so, distributed energy resource aggregators will not be required to re-register or re-qualify the entire distributed energy resource aggregation."[134] The Commission states that this requirement will ensure RTOs and ISOs have current information about the individual distributed energy resources that make up an aggregation, and allow the Distribution Utilities to review those modifications.

The NYISO's DER and Aggregation participation model facilitates the modification of Aggregation composition on a regular basis. An individual facility will be permitted to leave an Aggregation or change the Aggregation in which it participates, subject to certain rules. Specifically, when an individual facility leaves an Aggregation, the obligations accruing to the Aggregation will remain in effect until the end of the applicable market increment (*e.g.*, until the end of a calendar month for an Aggregation supplying Unforced Capacity). If an individual facility wants to change Aggregations to a different Aggregation of the same Aggregation type (*e.g.*, from one DER Aggregation to another DER Aggregation), the NYISO requires at least ninety (90) calendar days prior notice. The change will become effective following NYISO authorization, at the start of a calendar month.[135] The June 27 Filing proposed (and the

[132] *See* Accepted Services Tariff Sec. 13.3.3.

[133] Order No. 2222 at P 225.

[134] *Id.* at P 336.

[135] Proposed revision to accepted Services Tariff Sec. 4.1.10.3.

Commission accepted) a thirty-day prior notice requirement for facilities seeking to change Aggregations. The NYISO proposes to increase the requirement to ninety days prior notice in order to accommodate the utility review period directed by Order No. 2222.[136]

When an individual facility changes Aggregations, the NYISO must complete a set of administrative tasks to ensure the NYISO's systems accurately reflect the switch. The NYISO's rules were developed to provide flexibility to individual facilities and Aggregations, while accommodating the administrative and operational needs of the NYISO.

An Aggregation supplying Unforced Capacity is typically required to establish its capability once each Capability Period through a DMNC test.[137] When an Aggregation seeks to increase the amount of Unforced Capacity it is qualified to sell, it will need to conduct a supplemental DMNC test to prove the uprated capability. The requirement is the same for traditional Generators.[138] The amount of Unforced Capacity that an Aggregation is qualified to sell in the wholesale markets, therefore, will not immediately increase with the addition of a new DER. When a new DER enters an Aggregation, the Installed Capacity associated with the new DER will automatically be assigned to the Aggregation on the first day of the next full capability month.[139] However, the Aggregation must undertake a DMNC test to demonstrate its uprated capacity before it will be able to offer the Unforced Capacity of the new facility in an ICAP auction. This rule helps maintain reliability by requiring ICAP Suppliers to demonstrate the amount of capacity they are able to provide.

Likewise, if a DER leaves an Aggregation to discontinue participating in the Installed Capacity market, to act as a single Resource, or to participate in the Installed Capacity market as part of another Aggregation, the DER's Installed Capacity will be removed from the original Aggregation's Installed Capacity on the last day of the capability month for which the DER has been registered to participate in that Aggregation.

Finally, the NYISO has special rules for a DER supplying Unforced Capacity that seeks to switch participation models (*e.g.*, from a DER Aggregation to a single resource-type ESR Aggregation). When a DER seeks to change its participation model, it can only do so prior to the start of the Capability Year (*i.e.*, May 1 each year) and requires that the Aggregation seeking to participate with this DER going forward notify the NYISO of such a change prior to August 1 of the year prior to the beginning of the Capability Year. This rule, accepted by the Commission as part of the June 27 Filing, allows the NYISO to timely and accurately complete its Installed

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[136] Order No. 2222 at P 295.

[137] Services Tariff Sec. 5.12.1.2; Installed Capacity Manual Sec. 4.2.

[138] *See, e.g.*, Services Tariff Section 5.12.8 ("[n]ew Generators and Generators that have increased their Capacity since the previous Summer Capability Period due to changes in their generating equipment may, after satisfying the deliverability requirements set forth in the applicable provisions of Attachment X, Attachment Z, and Attachment S to the ISO OATT, qualify to supply Unforced Capacity on a foregoing basis during the Summer Capability Period based upon a DMNC test ….").

[139] Accepted Services Tariff Sec. 5.12.13.1.

Capacity Market Load Forecast and the Load forecasts utilized for the Installed Reserve Margin Study and for the Locational Capacity Requirements Study.

V. Proposed Modifications to the NYISO's DER and Aggregation Participation Rules

The NYISO proposes certain modifications to its DER and Aggregation participation rules to achieve compliance with Order No. 2222. The proposed modifications described below address directives related to: (i) the small utility opt-in, (ii) interconnection procedures, (iii) double-counting of services, (iv) single resource aggregations, (v) coordination among the NYISO, Distribution Utility, Aggregator, and RERRA,[140] and (v) market participation agreements.

A. Small Utility Opt-In

Order No. 2222 directs that RTOs and ISOs "may not accept bids from distributed energy resource aggregators aggregating customers of small utilities unless the relevant electric retail regulatory authority allows such customers of small utilities to participate in distributed energy resource aggregations."[141] This requirement is frequently referred to as the "small utility opt-in requirement." A small utility is defined as a utility that distributes 4 million MWh or less in the previous fiscal year.[142]

Pursuant to Order No. 2222, the NYISO must (i) accept bids from a DER Aggregator if the Aggregation comprises DER that are customers of utilities that distribute more than 4 million MWh in the previous fiscal year, and (ii) not accept bids from DER Aggregators if the Aggregation contains DER that are customers of small utilities, *unless* the RERRA permits those customers to participate in the NYISO-administered markets.[143]

The NYISO proposes to modify the accepted DER revisions to Services Tariff Section 4.1.10 to prohibit enrollment of an individual DER when (i) the DER is a customer of a small utility, and (ii) the RERRA has not affirmatively authorized that small utility's customers to participate in the wholesale markets in an Aggregation.[144] The NYISO proposes to use its own fiscal year (January 1 through December 31) for the purpose of identifying MWh distributed annually by each utility.

The NYISO proposes to require each Aggregator to determine whether each individual DER is a customer of a small utility, and, if so, to attest that the RERRA has authorized

[140] The NYISO proposes to define a "Relevant Electric Retail Regulatory Authority" as "[t]he entity that establishes the retail electric prices and competition policies for retail electric customers." Proposed revision to accepted Services Tariff Sec. 4.1.10.

[141] Order No. 2222 at P 56.

[142] *See* Order No. 2222 at P 63, n. 152.

[143] *Id.* at P 65.

[144] Proposed revision to accepted Services Tariff Section 4.1.10.

customers of that small utility to participate in the wholesale markets as part of an Aggregation. Such attestation will be required when an Aggregator enrolls a DER in an Aggregation, and annually thereafter (which annual attestation shall be made by April 1). The NYISO proposes to make the attestation effective for a full Capability Year (May 1 through April 30). Making the attestation effective for an entire Capability Year reduces the administrative burden to Aggregators and the NYISO, and will aid in the operation of the NYISO-administered markets, particularly the Installed Capacity market, which establishes Load and other forecasts on Capability Year basis. The NYISO further proposes that if it does not receive an annual attestation by April 1, the previously submitted attestation will remain effective. Aggregators will be responsible for the accuracy of their attestation.

B. Interconnection

Pursuant to Order Nos. 2003 and 2006, a distribution facility becomes FERC-jurisdictional when a resource connects to the facility for the purpose of making wholesale sales (often referred to as the "first use" test).[145] In Order No. 2222 the Commission declined to exercise jurisdiction "over the interconnection of a distributed energy resource to a distribution facility for the purpose of participating in RTO/ISO markets *exclusively through a distributed energy resource aggregation*,"[146] (emphasis added) and stated that the interconnection of a DER for the purpose of participating in a DER aggregation "would not constitute a first interconnection for the purpose of making wholesale sales under the 'first use' test."[147] Therefore, only facilities requesting interconnection to a distribution facility for the purpose of directly engaging in wholesale transactions—not through an aggregation—would constitute a "first use."[148] Because the Commission declined to exercise jurisdiction over such distributed energy resources, RTOs and ISOs are not required to establish standard interconnection procedures and agreements, or wholesale distribution tariffs for the interconnection of resources that participate exclusively through a distributed energy resource aggregation.[149]

The NYISO proposes to modify OATT Attachment Z, Sections 32.1.1 and 32.5 to comply with the Commission's directive. Specifically, the NYISO proposes to modify OATT Section 32.1.1 to add an additional category of interconnection not subject to the Small Generator Interconnection Procedures – "interconnections made solely for the purpose of

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[145] *Standardization of Generator Interconnection Agreements & Procedures*, Order No. 2003, 104 FERC ¶ 61,103, at P 804 (2003), *order on reh'g*, Order No. 2003-A, 106 FERC ¶ 61,220, *order on reh'g*, Order No. 2003-B, 109 FERC ¶ 61,287 (2004), *order on reh'g*, Order No. 2003-C, 111 FERC ¶ 61,401 (2005), *aff'd sub nom. Nat'l Ass'n of Regulatory Util. Comm'rs v. FERC*, 475 F.3d 1277 (D.C. Cir. 2007), *cert. denied*, 552 U.S. 1230 (2008); *Standardization of Small Generator Interconnection Agreements and Procedures*, Order No. 2006, 111 FERC ¶ 61,220, at P 5 (2005), *order on reh'g*, Order No. 2006-A, 113 FERC ¶ 61,195 (2005), *order granting clarification*, Order No. 2006-B, 116 FERC ¶ 61,046 (2006), *corrected*, 71 FR 53,965 (Sept. 13, 2006)Order No. 2003, 104 FERC ¶ 61,103 at P 804; *see* Order No. 2006, 111 FERC ¶ 61,220 at P 5; *see also* Order No. 845, 163 FERC ¶ 61,043.

[146] Order No. 2222 at P 96.

[147] *Id.* at P 97.

[148] *Id.*

[149] *Id.* at P 90.

generation with no wholesale for resale nor to net metering, or to the interconnection of facilities participating in the ISO markets exclusively through an Aggregation."[150] The NYISO also proposes to make a corresponding tariff modification to the definition of "Small Generating Facility" used in the Appendices to Attachment Z.[151] This modification makes clear that facilities participating in the NYISO-administered markets solely through an Aggregation (including an Aggregation of a single resource) are not subject to the NYISO's Small Generator Interconnection Procedures.[152] Consistent with the Commission's directives in Order No. 2222, the interconnection of a facility for the exclusive purpose of participation in an Aggregation, and not subject to the Small Generator Interconnection Procedures, will not constitute a "first use" of the facility for the purpose of determining whether the distribution facility is subject to Commission jurisdiction.

C. DER Participation Model

i. Double Counting of Services

Order No. 2222 permits RTOs and ISOs to "limit the participation of resources in RTO/ISO markets through a distributed energy resource aggregator that are receiving compensation for the same services as part of another program."[153] Rather than requiring a broad prohibition of dual retail and wholesale market participation (or of simultaneous participation in multiple wholesale market programs), Order No. 2222 took a more targeted approach. Each RTO/ISO must revise its tariffs to: (i) allow distributed energy resources that participate in retail programs to participate in the wholesale markets, (ii) allow distributed energy resources to provide multiple wholesale market services, and (iii) include "any appropriate restrictions on the distributed energy resources' participation in RTO/ISO markets through distributed energy resource aggregations, if narrowly designed to avoid counting more than once the services provided by distributed energy resources in RTO/ISO markets."[154] The Commission also directed RTOs/ISOs to describe in their compliance filings how they will account for the different services that distributed energy resources will provide in the RTO/ISO markets.[155]

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[150] The NYISO's proposed tariff revision would apply to facilities that participate in both a DER Aggregation and in a single Resource type Aggregation. The NYISO believes this application is consistent with the intent of Order No. 2222, and provides greater flexibility to individual facilities and Aggregators that aggregate in different combinations in order to meet business and operational needs, and in recognition that the NYISO's rules permit individual facilities to switch aggregations on a regular basis.

[151] *See* OATT Sec. 32.5 at Appendix 1 (Glossary of Terms) and Attachment 1 to Appendix 7 (Standard Small Generator Interconnection Agreement).

[152] Resources that seek to qualify as an Installed Capacity Supplier pursuant to Services Tariff Section 5.12.1 will still be required to meet the applicable Deliverability Interconnection Standard requirements located in OATT Attachment S.

[153] Order No. 2222 at P 159.

[154] *Id.* at P 160.

[155] *Id.*

a. Dual Participation

The NYISO permits simultaneous Generator and Demand Side Resource participation in the wholesale markets and in programs or markets operated to meet the needs of distribution systems located in the NYCA.[156] Generators and Demand Side Resources (including DER, once the DER rules become effective) seeking to engage in Dual Participation must be electrically located in the NYCA.[157] The NYISO's Dual Participation rules and operational coordination procedures were developed in conjunction with the New York Transmission Owners, and include special bidding rules to ensure the NYISO and the applicable Transmission Owner have adequate situational awareness and understand the Resource's operating status.

In accordance with the Commission's directive that authorizes a Distribution Utility to override the NYISO's dispatch of an Aggregation, the NYISO proposes to strike the final sentence of Services Tariff Section 4.1.11 that gave the ISO authority to determine schedules for resources engaged in Dual Participation.[158] Resources engaged in Dual Participation will be subject to the operational coordination protocols applicable to all Aggregations as described in Part V.D.ii and proposed Services Tariff Section 4.1.10.7.2.

b. Opportunity to Provide Multiple Wholesale Market Services

In paragraph 160 of Order No. 2222, the Commission directed that each RTO/ISO permit distributed energy resources to provide multiple wholesale market services. As explained in Part IV.B.i of this filing letter, each Aggregation will be able to qualify to provide Energy, Ancillary Services, and Installed Capacity. The NYISO does not propose any additional tariff revisions to comply with this directive. The NYISO includes this narrative so that all of the Commission's directives identified in paragraph 160 are addressed together.

The NYISO's DER and Aggregation rules will allow Aggregations—including DER Aggregations—to provide Energy, Ancillary Services, and Installed Capacity in the wholesale markets, so long as they are technically capable of providing the relevant service.[159] Specifically, Aggregations will be eligible to qualify to provide Energy, Operating Reserves, Regulation Service, and Unforced Capacity.[160]

The NYISO's market solution is a co-optimization of Energy, Operating Reserves, and Regulation Service, with the objective of minimizing total production cost. The calculation of clearing prices for each of these products incorporates participating Resources' lost opportunity

[156] Services Tariff Sec. 4.1.11.

[157] *Id.*

[158] Proposed revision to Services Tariff Sec. 4.1.11.

[159] Accepted Services Tariff Sec. 4.1.10.

[160] With respect to the provision of Ancillary Services, an Aggregation may only qualify to offer the Ancillary Services that all individual facilities in the Aggregation are qualified to provide. *See* accepted Services Tariff Sec. 4.2.1.3.1. This requirement allows the NYISO to maintain compliance with North American Electric Reliability Corporation, Northeast Power Coordinating Council, and New York State Reliability Committee reliability rules.

cost. The NYISO's co-optimization process helps ensure Resources are fairly compensated for each product they provide, and schedules Resources to provide each service consistent with the Resource's physical capability.

c. Restrictions on Distributed Energy Resource Participation in the Wholesale Markets to Avoid Double Counting of Services

Order No. 2222 permits RTOs and ISOs to include "any appropriate restrictions on the distributed energy resources' participation in RTO/ISO markets through distributed energy resource aggregations, if narrowly designed to avoid counting more than once the services provided by distributed energy resources in RTO/ISO markets."[161] The NYISO proposes modifications to Services Tariff Section 4.1.10 to avoid double counting of services.

The NYISO's accepted DER revisions to Services Tariff Section 4.1.10.1 state that "Aggregators shall not offer any Resource as part of an Aggregation that is participating in the ISO Administered Markets in a different Aggregation or as an individual Resource."[162] This rule avoids the potential for that DER's capability to be offered more than once in the wholesale markets.

To achieve compliance with Order No. 2222, the NYISO proposes a further revision to Section 4.1.10.6 of the Services Tariff to prohibit a DER that provides service (*e.g.*, Energy, Operating Reserves, and capacity) to a utility from providing the same, or a functionally similar service, in the NYISO-administered markets.[163] Under this rule, an Aggregator will be prohibited from enrolling a new DER in an Aggregation when the Aggregation is qualified to provide a service in the NYISO-administered markets that the new DER provides in a retail market or program. For example, if an Aggregator seeks to enroll a DER that provides a reserve, or reserve-like service to a local utility, it cannot enroll that DER in an Aggregation that is qualified to provide Operating Reserves in the NYISO-administered wholesale markets.

The proposed rule serves two purposes. First, it will help maintain reliability by preventing a DER from offering the same MW for the same service in two different places. Second, it will help ensure rates remain just and reasonable by preventing the DER from being compensated twice for providing the same service. Requiring Aggregators to ensure that a DER offers a service once, and is only compensated once, reduces costs to consumers, and sends efficient market signals to participants.

ii. Single Resource Aggregations

Order No. 2222 requires each RTO/ISO to revise its tariff to allow a single qualifying distributed energy resource to utilize the rules for a distributed energy resource aggregation and

[161] Order No. 2222 at P 160.

[162] Accepted Services Tariff Sec. 4.1.10.1.

[163] *Id.* at Sec. 4.1.10.6.

serve as its own distributed energy resource aggregator.[164] The Commission affirmed that a single distributed energy resource aggregation must comply with all applicable aggregation requirements, including minimum and maximum capacity requirements for individual distributed energy resources.[165] The Commission further affirmed that a distributed energy resource that serves as its own aggregator would also be subject to any requirements applicable to aggregators.[166]

The NYISO proposes to modify accepted Services Tariff Sections 2.1 and 4.1.10.1 in compliance with this directive. First, in Section 2.1, the NYISO proposes to revise the definition of "Aggregation" as follows:

> A Resource, comprised of ~~two~~ one or more individual Generators, Demand Side Resources, or Distributed Energy Resources, ~~or one or more Demand Side Resources,~~ at separate points of interconnection and that are grouped and dispatched as a single unit by the ISO, and for which Energy injections, withdrawals and Demand Reductions are modeled at a single Transmission Node. *See*, Services Tariff Sec. 4.1.10.

Second, the NYISO proposes to modify Services Tariff Section 4.1.10.1 to state: "Aggregations must contain ~~at least two~~ one or more Resources~~, except that a single Demand Side Resource may participate as a single-resource Aggregation~~."

These rules complement one another, and meet Order No. 2222's directive to permit Aggregations of a single Resource.

Owners and operators of individual facilities may seek to qualify to be an Aggregator. The NYISO does not have rules that restrict the types of parties that may qualify as an Aggregator in the NYISO-administered markets (*e.g.*, owners or operators of individual facilities). An entity need only show that it meets the applicable requirements (including meeting the NYISO's capitalization and credit requirements) in order to be authorized. The NYISO, therefore, does not propose tariff modifications to explicitly permit an individual Resource to become its own Aggregator. Specifically identifying a single type of entity that may qualify to be an Aggregator may cause confusion among developers, Market Participants and others, as to what other types of entities may also qualify.

D. Coordination between the NYISO, Aggregator, and Distribution Utility

Order No. 2222 requires each RTO/ISO to establish market rules that address coordination between the RTO/ISO, the distributed energy resource aggregator, the distribution

[164] Order No. 2222 at P 185.

[165] *Id.* at P 186.

[166] *Id.* at P 187.

utility, and the RERRAs.[167] Order No. 2222 breaks these coordination protocols into three separate categories: (i) the role of distribution utilities, (ii) ongoing operational coordination, and (iii) the role of the RERRAs. Each category is addressed below.

i. Role of Distribution Utilities

Order No. 2222 requires each RTO/ISO to modify its tariff to include a comprehensive, non-discriminatory process for Distribution Utilities to review individual distributed energy resources that comprise an aggregation.[168] Such review will be triggered by the initial registration of the distributed energy resource aggregation, and when the aggregator makes incremental changes to an aggregation that is already participating in the wholesale market.[169]

Specifically, the RTO/ISO must coordinate with the Distribution Utility to develop a review process that allows the Distribution Utility to determine whether: (i) each proposed distributed energy resource is capable of providing wholesale market services in a distributed energy resource aggregation, and (ii) whether that distributed energy resource's participation in the wholesale markets "will not pose significant risks to the reliable and safe operation of the distribution system."[170] The Order further required that the RTO/ISOs share any necessary information and data collected about the individual distributed energy resources with the applicable Distribution Utility. Finally, Order No. 2222 required each RTO/ISO to revise its tariff to incorporate dispute resolution provisions as part of its distribution utility review process, and, where applicable, describe how existing dispute resolution procedures are sufficient.

Proposed Services Tariff Section 4.1.10.7.1 addresses coordination between the NYISO and applicable Distribution Utility to evaluate potential impacts of a DER on the affected distribution system.[171] The NYISO's tariff modifications (i) authorize the applicable Distribution Utility to evaluate the reliability and safety impact(s) of each DER connected to its electric facilities that seeks to participate in the wholesale markets; (ii) state that the NYISO will provide the applicable Distribution Utility with the physical and operating characteristics the NYISO collects for the DER as explained in Part IV.E of this compliance filing; and (iii) authorize the NYISO to limit the capacity (MW) and/or provision of wholesale market services the DER is authorized to supply to address the Distribution Utility's reliability and/or safety concerns.

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[167] Order No. 2222 at P 278.

[168] *Id.* at P 292.

[169] *Id.*

[170] *Id.*

[171] The NYISO proposes to define a "Distribution Utility" as "[a]n entity, such as a Transmission Owner or Public Power Entity that owns and operates facilities used for the retail distribution of electricity and provides retail service(s) under tariffs approved by the applicable Relevant Electric Retail Regulatory Authority." Proposed revision to Services Tariff Sec. 4.1.10.5.

The NYISO believes it is appropriate to allow Distribution Utilities the full sixty-day review period envisioned by the Commission in Order No. 2222.[172] The Distribution Utility is not required to utilize the full sixty-day review period to complete its review, and the NYISO will work with utilities on a case-by-case basis to facilitate expedient review of DER. If the NYISO does not receive a notification within the sixty-day evaluation period that a DER poses a significant threat to the reliability and/or safety of the distribution system, then the NYISO will assume the operation of the Distributed Energy Resource will not have a significant adverse reliability and/or safety impact on the applicable distribution system.

Services Tariff Section 11 contains the NYISO's Dispute Resolution Procedures. These procedures, both formal and informal, are available to parties having a dispute under the ISO's Services Tariff and OATT, the ISO Procedures, or any Agreement entered into under either Tariff.[173] Entities that seek to enroll a DER or register an Aggregation for participation in the NYISO's participation model will be able to utilize these procedures to resolve related concerns arising under the market rules under the Services Tariff and OATT.

ii. Ongoing Operational Coordination

Order No. 2222 requires RTOs and ISOs to establish procedures to facilitate operational coordination among the RTO/ISO, Distribution Utility and distributed energy resource aggregator. Such procedures must (i) establish a process for ongoing coordination, including operational coordination, that addresses data flows and communication among the NYISO, the distributed energy resource aggregator, and distribution facility, and (ii) require the distributed energy resource aggregator to report to the RTO/ISO changes to its offered quantity and related distribution factors resulting from distribution line faults or outages.[174] The Order also requires RTOs and ISOs to establish in-day operating protocols that allow the applicable Distribution Utility to override the RTO/ISO's dispatch of a distributed energy resource aggregation in order to maintain distribution system reliability and safety.[175]

The NYISO has worked with the New York Transmission Owners to identify and develop appropriate operating procedures and protocols to facilitate simultaneous participation in the NYISO-administered markets and in programs or markets operated to meet the needs of distribution systems located in the NYCA.

These procedures and protocols build upon and enhance the operational coordination that has been developed over time for conventional Generators. The New York Transmission Owners are able to directly contact the NYISO to request that a Resource (or Resources) be scheduled in order to meet a local reliability need. The NYISO reviews such requests to ensure

[172] Order No. 2222 at P 295.

[173] Services Tariff Sec. 11.1.1. Certain exceptions, identified in Services Tariff Sec. 11.1.2, will not apply to the coordination procedures developed in compliance with Order No. 2222.

[174] Order No. 2222 at P 310.

[175] *Id.*

that the revised schedule will not harm bulk power system reliability, and, if not, schedules the Resource as requested. As the NYISO described in the June 27 Filing, these existing processes to address local reliability will remain in place.

The NYISO proposes tariff modifications in this filing that incorporate Aggregation-specific operating procedures and processes in the Services Tariff in compliance with Order No. 2222. New Services Tariff Section 4.1.10.7.2 directs the NYISO, Aggregator, and Transmission Owner to coordinate scheduling and dispatch for all Generators, Demand Side Resources, and DER participating in an Aggregation. The Aggregator will be responsible for (i) submitting Bids, (ii) updating Bids as necessary to address unit derates and distribution system conditions affecting the Aggregation, (iii) communicating to the Distribution Utility the specific facilities it intends to dispatch to meet the NYISO-issued schedule, and (iv) meeting NYISO-issued schedule and dispatch. The Distribution Utility will be responsible for advising the Aggregator of any distribution system conditions affecting the Aggregation (*e.g.*, line outages, limitations, or disruptions), evaluating the resource mix provided by the Aggregator, and identifying any individual resources that cannot be dispatched due to distribution system conditions, and communicating any derates (or no-operation orders) to the Aggregator.[176]

When a Distribution Utility notifies an Aggregator that an individual Generator, Demand Side Resource, or Distributed Energy Resource must be derated or forced out of service, the Aggregator shall promptly adjust its Day-Ahead Market and Real-Time Market Bids in accordance with the NYISO's bidding requirements.[177] If the Aggregator is unable to adjust its Day-Ahead or Real-Time Market Bids (*e.g.*, due to the applicable bidding window being closed), and it cannot meet its schedule, it must notify the NYISO of a full or partial outage of its Aggregation.[178] An Aggregation that is unable to meet its Base Point Signal due to distribution system reliability and/or safety concerns will be subject to the applicable penalties and charges.[179]

Coordination will be performed in compliance with the requirements described in the NYISO's business practice manuals, specifically the Day-Ahead Scheduling Manual, Transmission and Dispatch Manual, and Emergency Operations Manual. These Manuals already describe the various coordination and scheduling processes for all Resources in the Day-Ahead and Real-Time Markets. The NYISO's compliance proposal makes clear that the NYISO, Transmission Owners, and Aggregators "shall coordinate scheduling and dispatch for all Generators, Demand Side Resources, and Distributed Energy Resources participating in the

[176] The NYISO proposes these Distribution Utility obligations to comply with Order No. 2222's requirement that permit a Distribution Utility to override RTO/ISO dispatch when necessary to maintain reliable and safe operation of the distribution system. Order No. 2222 P 310. The NYISO also proposes to modify Services Tariff Section 4.1.11 to remove an existing market rule that the "ISO has the authority to determine schedules" for Resources engaged in dual participation. Proposed revision to Services Tariff Sec. 4.1.11.

[177] *See* Services Tariff Secs. 4.2 and 4.4.

[178] Proposed Services Tariff Sec. 4.1.10.2.

[179] *Id.*

wholesale markets in an Aggregation in accordance with the ISO Procedures."[180] Including the specific procedures in the manuals is consistent with the NYISO's existing practice, and provides necessary flexibility to adapt the operating procedures as system conditions evolve. The NYISO's business practice manual development and approval procedures require the NYISO to obtain input from and approval of its stakeholder community, which provides needed transparency to interested parties.

iii. Role of the Relevant Electric Retail Regulatory Authority

Order No. 2222 requires each RTO and ISO to include in its market rules how it will accommodate voluntary RERRA involvement in coordinating the participation of aggregated distributed energy resources in the organized markets.[181] Specifically, Order No. 2222 requires the RTOs and ISOs to (i) describe how they will accommodate and incorporate voluntary RERRA involvement in DER and Aggregation coordination,[182] and (ii) coordinate with Distribution Utilities and the RERRA to establish protocols for sharing metering and telemetry data that minimize costs and other burdens, and respects customer privacy and cybersecurity.[183]

The NYISO proposes new Services Tariff Section 4.1.10.7.3 in compliance with Order No. 2222's directive to include voluntary RERRA involvement in coordination and participation of aggregated distributed energy resources. Specifically, the NYISO proposes to require each Aggregator to ensure that its Aggregation and the individual Resources within the Aggregation comply with all applicable rules and regulations promulgated by the RERRA and included in a Distribution Utility's tariffs. The ISO also proposes to provide each DER's RERRA with the physical and operational data collected for the DER upon the request. The information the NYISO will share with the RERRA is the same as is provided to the applicable Distribution Utility, and will allow the RERRA to evaluate the facility if it so desires. If the RERRA identifies any concerns, the NYISO will consider those concerns in its evaluation of the DER.

The metering and telemetry rules submitted as part of the June 27 Filing are the result of the NYISO's cooperative stakeholder process, and reflect the input of a wide variety of stakeholders. The NYISO respectfully submits that the accepted metering and telemetry rules comply with the Commission's directive.

E. Market Participation Agreement

Order No. 2222 requires each RTO/ISO to establish market rules that address market participation agreements for distributed energy resource aggregators.[184] The RTO/ISO tariff must include a standard market participation agreement that defines the aggregator's role and responsibilities, and its relationship with the RTO/ISO. The aggregator must execute the

[180] Proposed Services Tariff Sec. 4.1.10.7.2.

[181] Order No. 2222 at P 322.

[182] *Id.*

[183] *Id.* at P 324.

[184] *Id.* at P 352.

agreement prior to participation in the wholesale markets.[185] The market participation agreement must include an attestation that the aggregator's aggregation is compliant with the tariffs and operating procedures of the Distribution Utilities and the rules and regulations of any RERRA.[186]

The NYISO's processes address the Commission's directives in several ways. First, an Aggregator will be a NYISO Customer and will be required to register and execute a Form of Service Agreement. Second, each Aggregator will be obligated to comply with the NYISO's Aggregation registration and DER enrollment requirements.[187]

Aggregators will be Market Participants under the NYISO's Tariffs.[188] Each Market Participant "that sells or purchases Energy, … sells or purchases Capacity, or provides Ancillary Services in the ISO Administered Markets utilizes Market Services and must take service as a Customer under this Tariff and enter into a Service Agreement under the Tariff."[189] The NYISO's Form of Service Agreement for New York ISO Market Administration and Control Area Services Tariff requires the Customer to "represent[] and warrant[] that it has met all applicable requirements set forth in the ISO Market Administration and Control Area Services Tariff … and has complied with all applicable ISO Procedures."[190]

The Form of Service Agreement also requires that the Customer submit a Completed Application pursuant to Services Tariff Section 9.2.[191] Services Tariff 9.2, in turn, requires the provision of "all of the information reasonably required by the ISO to permit the ISO to perform its responsibilities under the ISO Services Tariff." If the NYISO identifies a need to update the registration forms for Aggregation participation in the wholesale markets, it will make such updates prior to the implementation of the DER and Aggregation participation model.

Finally, the NYISO will require certain registration data necessary to establish an Aggregation, and additional information required to enroll each individual facility.[192] As part of those registration and enrollment requirements, the Aggregator will be required to attest that it has all necessary authorizations from the Distribution Utility and RERRA necessary to establish the Aggregation and for each individual facility to participate in an Aggregation.[193]

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[185] *Id.*

[186] *Id.*

[187] Accepted Services Tariff Sec. 4.1.10.5.

[188] A "Market Participant" is defined as "an entity, excluding the ISO, that produces, transmits, sells, and /or purchase for resale Unforced Capacity, Energy or Ancillary Services in the wholesale market." Services Tariff Sec. 2.13.

[189] Services Tariff Sec. 4.1.2.

[190] *Id.* at Sec. 16 (Att. A).

[191] *Id.*

[192] *See, e.g.,* Part IV.E.

[193] Proposed revision to accepted Services Tariff Sec. 4.1.10.5.

VI. Effective Date

The NYISO is in the midst of developing, testing, and deploying the modifications to the NYISO's software and hardware that are necessary to implement its DER and Aggregation participation model in the fourth quarter of 2022. If the Commission determines that the NYISO needs to implement additional or different requirements, the NYISO needs to know about those requirements as soon as possible as they will directly impact the NYISO's implementation timeline and could require NYISO to go back and revise or re-develop "completed" components of its implementation. For the foregoing reasons, the NYISO respectfully requests Commission action within sixty (60) days, *i.e.*, by September 17, 2021, accepting the tariff revisions proposed in this filing. Commission action within sixty days will: (a) allow the NYISO to confidently proceed with developing and deploying the software changes necessary to implement the DER and Aggregation participation model; and (b) enable the NYISO to achieve its requested effective date for all aspects of this proposal.

Order No. 2222 paragraph 361 requires RTOs/ISOs to propose a reasonable implementation date for the tariff modifications required by the Order. The NYISO has already implemented several aspects of its June 27 Filing, consistent with the schedule proposed and accepted in that proceeding. The NYISO is in the midst of developing, testing, and deploying the modifications to the NYISO's software and hardware that are necessary to implement its DER and Aggregation participation model.

The NYISO currently anticipates that the software and hardware modifications, testing, and deployment necessary to implement its DER and Aggregation tariff revisions will be ready in the fourth quarter of 2022.

The NYISO is unable to propose a precise effective date for the tariff revisions described in this filing at this time due to the ongoing software development, testing, and deployment that must be completed prior to the revisions becoming effective. The NYISO will continue to work diligently to implement its proposed compliance revisions as soon as possible. Consistent with previous matters in which it has requested a flexible effective date contingent upon the completion of software upgrades, the NYISO proposes to submit a compliance filing at least two weeks prior to the proposed effective date that will specify the date on which the revisions will take effect. Consistent with Commission precedent, such filing will provide adequate notice to the Commission and Market Participants of the implementation for integration of DER and Aggregations.[194] The NYISO anticipates proposing an effective date for the tariff revisions

[194] *See, e.g., New York Indep. Sys. Operator, Inc.*, 106 FERC ¶ 61,111 at P 10 (2004); Docket No. ER 11-2544-000, *New York Indep. Sys. Operator, Inc.*, Letter Order at 1 (February 10, 2011); Docket No. ER15-485-000, *New York Indep. Sys. Operator, Inc.*, Letter Order at 2 (January 15, 2015); *New York Indep. Sys. Operator, Inc.*, 151 FERC ¶ 61,057 at P 20 (2015).

described in this filing that is the same date as the remaining tariff revisions proposed in the June 27 Filing and subsequently accepted by the Commission.[195]

VII. Service

The NYISO will send an electronic link to this filing to the official representative of each party to this proceeding, to the official representative of each of its customers, to each participant on its stakeholder committees, to the New York Public Service Commission, and to the New Jersey Board of Public Utilities. In addition, a complete copy of the documents included with this filing will be posted on the NYISO's website at www.nyiso.com.

VIII. Communications

Communications and correspondence regarding this filing should be directed to:

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[195] The NYISO's blacklined tariff sheets submitted as Attachments II and IV of this filing are submitted on top of the tariff revisions proposed in Docket No. ER19-2276-000, *et al.*, and reflect Commission acceptance of those revisions.

IX. Conclusion

Wherefore, the NYISO respectfully requests that the Commission accept the Tariff revisions proposed in this compliance filing, without modification, and determine that the NYISO complies with the requirements of Order No. 2222.

Respectfully submitted,
/s/ Gregory J. Campbell
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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010.

Dated at Rensselaer, NY this 19th day of July, 2021.

/s/ Mohsana Akter

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