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Independent System Operator

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By Electronic Delivery

Mr. Kurt D. Longo
Director, Division of Electric Power Regulation – East
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: *Response to October 1, 2021, Letter Requesting Additional Information in Docket No. ER21-2460-000, -001*

Dear Director Longo:

The New York Independent System Operator, Inc. ("NYISO") submits this response to your letter issued October 1, 2021 ("October 1 Letter"), seeking additional information in the above-referenced docket. The October 1 Letter seeks additional information regarding the NYISO's compliance with Order No. 2222.[1] The NYISO previously submitted its compliance filing on July 19, 2021[2] ("July 2021 Filing") and responded to comments and protests in its September 14, 2021, Answer ("NYISO Answer").[3]

I. Responses to October 1 Letter's Questions

Issue 1 – Interconnection

In Order No. 2222, the Federal Energy Regulatory Commission ("Commission") declined to exercise its jurisdiction over the interconnections of distributed energy resources to distribution facilities for the purpose of participating in Regional Transmission Organization ("RTO") and Independent System Operator ("ISO") markets exclusively as part of a distributed energy resource aggregation and directed each RTO/ISO to make any necessary tariff changes to reflect this guidance in its compliance filing.[4] In Order No. 2222-A, the Commission clarified that the Commission declined to exercise jurisdiction over the interconnections of distributed energy resources, including the interconnections of Qualifying Facilities (QFs), to distribution

[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 (2020) (Order No. 2222), *order on reh'g*, Order No. 2222-A, 174 FERC ¶ 61,197 (Order No. 2222-A), *order on reh'g*, Order No. 2222-B, 175 FERC ¶ 61,227 (2021) (Order No. 2222-B).

[2] *New York Indep. Sys. Operator, Inc.*, Compliance Filing and Request for Flexible Effective Date, Docket No. ER21-2460-000 (July 19, 2021) ("July 2021 Filing").

[3] New York Indep. Sys. Operator, Inc. Sept. 14, 2021 Answer, Docket No. ER21-2460-000 ("NYISO Answer").

[4] Citations included in the October 1 Letter have been omitted from this response.

facilities for the purpose of participating in RTO/ISO markets exclusively as part of a distributed energy resource aggregation.

Commission Question 1

NYISO states that it proposes to modify Open Access Transmission Tariff ("OATT") Attachment Z, section 32.1.1 to add an additional category of interconnection that is not subject to the Small Generator Interconnection Procedures (SGIP) – "the interconnection of facilities participating in the ISO markets exclusively through an Aggregation." OATT Attachment Z, section 32.1.1 states that the SGIP "appl[ies] to interconnections of Small Generating Facilities to the New York State Transmission System, and interconnections to the Distribution System subject to Federal Energy Regulatory Commission jurisdiction."

(a) It appears that NYISO's proposed modification would exempt from the SGIP all interconnections of resources participating in the NYISO markets exclusively through an Aggregation, even those interconnected to the New York State Transmission System. Please explain whether the provision as modified makes such an exemption, and if so, how this is consistent with the Commission's guidance.

NYISO Response

The tariff revisions submitted with the July 2021 Filing proposed to modify OATT Attachment Z, Sections 32.1.1 and 32.5 to comply with the Commission's determination that interconnections of Distributed Energy Resources ("DER") to the distribution system solely for the purpose of participating in the wholesale markets through an Aggregation were not subject to Commission jurisdiction. The tariff revisions proposed in the July 2021 Filing inadvertently applied the Commission's directive to the interconnection of DER on both (i) the Distribution System[5] and (ii) the New York State Transmission System.[6] The tariff revision was intended to apply only to interconnections for DER on the Distribution System. Therefore, the NYISO requests that the Commission instruct it to revise OATT Attachment Z such that only those DER that propose to interconnect to the Distribution System for the purposes of participating in the wholesale markets through an Aggregation are not subject to the SGIP. The proposed revisions below would, if directed by the Commission, correct the inadvertent oversight identified in OATT Attachment Z.

Revise OATT Attachment Z, Section 32.1.1 to state: "interconnections made solely for the purpose of generation with no wholesale sale for resale nor to net metering,

[5] Distribution System is defined by Section 32.1, Attachment 1 as "The Transmission Owner's facilities and equipment used to distribute electricity that are subject to FERC jurisdiction, and are subject to the ISO's Large Facility Interconnection Procedures in Attachment X to the ISO OATT or Small Generator Interconnection Procedures in Attachment Z to the ISO OATT under FERC Order Nos. 2003 and/or 2006. For the purpose of the SGIP, the term Distribution System shall not include LIPA's distribution facilities."

[6] Capitalized terms that are not otherwise defined in this filing shall have the meaning specified in Section 2 of the Market Administration and Control Area Services Tariff ("Services Tariff") and Section 1 of the OATT.

or to the interconnection of facilities to the Distribution System participating in the ISO Markets exclusively through an Aggregation."

Revise OATT Attachment Z, Section 32.5 definitions of Small Generating Facility to state: "(v) facilities connecting to the Distribution System that participate in the ISO markets exclusively through an Aggregation."[7]

Issue 2 – Definitions of Distributed Energy Resource and Distributed Energy Resource Aggregator

In Order No. 2222, the Commission amended section 35.28(b) of the Commission's regulations to define a distributed energy resource as "any resource located on the distribution system, any subsystem thereof or behind a customer meter." The Commission explained that its adopted definition of distributed energy resource is technology-neutral, thereby ensuring that any resource that is technically capable of providing wholesale services through aggregation is eligible to do so, which enhances competition in the RTO/ISO markets and, in turn, helps to ensure that these markets produce just and reasonable rates.

Commission Question 1

NYISO states that section 2.4 of its accepted but not yet Services Tariff 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 [New York Control Area ("NYCA")]." According to NYISO, this definition permits Generators (including electric storage resources, thermal storage, intermittent generation, distributed generation, and thermal generation) and Demand Side Resources to qualify as a Distributed Energy Resource. NYISO states that a Distributed Energy Resource may also be a single facility that combines multiple resource types behind the same point of interconnection.

(a) Please explain whether NYISO's definition of Distributed Energy Resource is technology-neutral and encompasses all potential technology types such that NYISO would have no need to further clarify or revise the definition as new technologies are developed.

NYISO Response

The NYISO's definition of Distributed Energy Resource is technology neutral and encompasses all potential technology types the NYISO is aware of that are capable of providing wholesale services by responding to the NYISO's commitment and dispatch instructions as a Generator or as a Demand Side Resource. Consistent with the requirements of Order No. 2222,

[7] The definition of Small Generating Facility appears in Appendix 1 (Glossary of Terms) and Attachment 1 to Appendix 7 (Standard Small Generator Interconnection Agreement) of Section 32.5 of the OATT. The NYISO requests that the Commission direct it to modify the definition in both Appendix 1 and Appendix 7.

the NYISO's definition of DER imposes a maximum size on individual resources that inject energy.[8] However, there is no minimum size restriction on the individual resources participating in an Aggregation and there is no maximum size restriction on the entire Aggregation. Subject to the specified maximum injection limits, with just a few enumerated program-specific exceptions that the NYISO addresses in its response to Issue 3 (Types of Technologies) Question 1(a), any technology type that is capable of responding to the NYISO's commitment and dispatch instructions as a Generator or as a Demand Side Resource is eligible to participate as a DER.

The definitions of Generator and Demand Side Resource in the NYISO's Tariffs are broad.

> **Generator**: A facility, including the Generator of a BTM:NG Resource, capable of supplying Energy, Capacity and/or Ancillary Services that is accessible to the NYCA. A Generator comprised of a group of generating units at a single location, which grouped generating units are separately committed and dispatched by the ISO, and for which Energy injections are measured at a single location, and each unit within that group, shall be considered a Generator.[9]
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> · Energy Storage Resources ("ESRs"), wind, solar and landfill gas Intermittent Power Resources ("IPRs"), and Limited Energy Storage Resources ("LESRs") are all Generators under the NYISO Tariffs.
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> **Demand Side Resource:** A Resource located in the NYCA that: (i) is capable of controlling demand by either curtailing its Load or by operating a Local Generator to reduce Load from the NYS Transmission System and/or the distribution system at the direction of the ISO, in a responsive, measurable and verifiable manner within time limits, and (ii) is qualified to participate in competitive Energy, Capacity, Operating Reserves or Regulation Service markets, or in the Emergency Demand Response Program pursuant to this ISO Services Tariff and the ISO Procedures.[10]

The NYISO's accepted definition of DER (1) captures all of the Resource types that the Aggregation software it is currently developing will be capable of accommodating, and (2) is sufficiently broad to include within its scope fuel cells, resources that consume hydrogen to produce electricity, and all other feasible but not yet commercially viable technologies the NYISO is aware of that are capable of operating as Generators or as Demand Side Resources.

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[8] *See* Order No. 2222 at PP 179-181 (requiring ISOs and RTOs to specify maximum size requirement for resources).

[9] Services Tariff Sec. 2.7.

[10] Services Tariff Sec. 2.4.

The NYISO proposed its DER and Aggregation participation model in June of 2019[11] and the Commission accepted the associated tariff modifications in January of 2020,[12] more than seven months before the Commission issued Order No. 2222 in September of 2020. The NYISO has been working to implement its accepted DER rules since early 2020. Although the NYISO recognizes that Order No. 2222 imposed some additional requirements, the NYISO does not believe that Order No. 2222 imposed any requirements that are contrary to, or inconsistent with the NYISO's ongoing efforts to implement DER in its markets.

As explained on pages 47 to 53 of the NYISO Answer in this proceeding, the definition of DER that the NYISO proposed in 2019 and the Commission accepted as just and reasonable in its 2020 DER Order was not designed, developed, or intended to accommodate resources that are not capable of responding to the NYISO's dispatch instructions. As the NYISO explains in its response to Issue 8 Question 1(a), completing and deploying the hardware and software systems necessary to implement DER rules that the Commission accepted in January of 2020 by the end of 2022 is a significant undertaking and is not guaranteed. A primary concern that the NYISO faces in its effort to implement DER in its Energy and Ancillary Services Markets is that incorporating DER will increase the solution times for its Day-Ahead Security Constrained Unit Commitment ("SCUC") program and for its Real-Time Commitment ("RTC") and Real-Time Dispatch ("RTD") programs. To avoid introducing additional complexity to an already difficult DER implementation effort, the Commission should permit the NYISO to implement the DER rules it accepted in 2020 before the Commission requires the NYISO to develop additional, unrelated capabilities and functionality to support resources that are not capable of responding to the NYISO's dispatch instructions.

Resources that do not qualify as DERs can still participate in the NYISO's markets. For example, unlike the Demand Side Resources that are eligible to participate in DER Aggregations, the NYISO's existing Special Case Resource ("SCR") program and Emergency Demand Response Program ("EDRP") enroll resources that are capable of reducing demand in response to a NYISO instruction. However, SCRs are entitled to more advanced notice than a DER before they must perform, and any performance by an EDRP resource is voluntary. The NYISO intentionally decided not to terminate these existing demand response programs in its June 2019 Filing because incorporating these existing programs into DER would have unnecessarily and substantially increased the scope and complexity of the NYISO's DER rules. The NYISO will be considering improvements to these demand response programs and other ways to better incorporate price-responsive load in its wholesale markets through its Engaging the Demand Side efforts. When the NYISO implements its DER and Aggregation participation model, the SCR program and EDRP will remain available as stand-alone programs that qualifying resources can join to participate in the NYISO's Capacity Market.

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[11] 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 2019 Filing").

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

If the Commission determines in this proceeding that the NYISO's definition of DER is not broad enough to capture all of the resource types the Commission requires, rather than directing the NYISO to change its accepted DER rules and market design to incorporate additional resource types that may not be able to take advantage of the currently approved design which requires that resources to follow the NYISO's commitment and dispatch instructions, the Commission should instead direct the NYISO to work with its stakeholders to design and develop market rules to accommodate these additional resource types.[13] Requiring the NYISO to retrofit resources that are not capable of following the NYISO's commitment and dispatch instructions into its Commission-accepted DER market design at this juncture would unnecessarily delay NYISO's implementation of DER for *all* Resources. Depending on the changes required, the delay could add several years to the timeline for DER implementation.

(b) Could a resource located on the distribution system, any subsystem thereof or behind a customer meter that does not fall under the definition of Demand Side Resource or Generator and is not a facility comprising two or more resource types participate as part of an Aggregation in NYISO?

NYISO Response

Please see the NYISO's response to Issue 2 Question 1(a). A resource that does not satisfy the definition of either a Demand Side Resource or a Generator could not participate in a DER Aggregation under the rules the Commission accepted in its 2020 DER Order.

The NYISO's DER rules do not limit participation based on where a resource is located within the NYCA, as long as the resource satisfies the Tariff requirements the Commission accepted in the 2020 DER Order. The NYISO's accepted DER rules allow resources located behind a customer meter to participate in an Aggregation.[14] The NYISO only requires that the resource provide sufficient metering and telemetry data to the Aggregator to permit that Aggregator to provide Aggregation-level metering and telemetry data to the NYISO for the purposes of determining whether the Aggregation operated consistent with the NYISO's dispatch instructions.

The NYISO's proposed Order No. 2222 compliance revisions to the definition of "Aggregation" in Section 2.1 of the Services Tariff and to Section 4.1.10.1 of the Services Tariff will broaden access to single-resource Aggregations if accepted by the Commission. As a result, the language addressing "a facility comprising two or more resource types" will no longer limit

[13] For example, the NYISO would need to develop an entirely new set of rules to accommodate energy efficiency that have not demonstrated the ability to follow NYISO commitment or dispatch instructions. *See* pages 47 to 53 of the NYISO Answer.

[14] *See* July 2021 Filing at 14.

the ability of any Generator that is 100 kW or larger to participate as a DER, and both Generators and Demand Side Resources will be able to participate as single-resource DER Aggregations.[15]

Issue 3 – Eligibility to Participate

Participation Model

In Order No. 2222, the Commission added section 35.28(g)(12)(i) to the Commission's regulations to require each RTO/ISO to establish distributed energy resource aggregators as a type of market participant and to allow distributed energy resource aggregators to register distributed energy resource aggregations under one or more participation models in the RTO's/ISO's tariff that accommodate the physical and operational characteristics of the distributed energy resource aggregation. The Commission stated that it would evaluate each proposal submitted on compliance to determine whether it meets the goals of Order No. 2222 to allow distributed energy resources to provide all services that they are technically capable of providing through aggregation.

Commission Question 1

NYISO states that the DER and Aggregation participation model provides for both homogeneous Aggregations and heterogeneous Aggregations. NYISO explains that a homogeneous Aggregation that is composed entirely of a single Resource type, 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. As an example, NYISO states that "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." As another example, NYISO states that "an Aggregation comprised solely of batteries will be treated as a single Energy Storage Resource." In contrast, NYISO states that a heterogeneous Aggregation, defined in the NYISO's tariff as a DER Aggregation, is a subset of Aggregations that is subject to the general rules for Aggregations and certain DER Aggregation-specific rules. In its answer, NYISO states that NYISO's resource-specific operating rules will better reflect the resources' operating characteristics than the more generic DER Aggregation rules that apply to Demand Side Resources and heterogeneous Aggregations.

(a) Given NYISO's statement that its resource-specific operating rules will better reflect the operating characteristics of the resources in a homogeneous Aggregation than the DER Aggregation rules, please explain how the DER Aggregation rules accommodate the physical and operational characteristics of heterogeneous Aggregations, and, in particular, heterogeneous Aggregations that include mostly one resource type. For example, please explain how NYISO's DER Aggregation rules

[15] The NYISO's accepted DER rules already allow Aggregations of Distributed Energy Resources that are 100 kW or larger to participate as single-resource Aggregations. *See* the definition of "Aggregation" in Section 2.1 of the Market Services Tariff that was proposed in the June 2019 Filing and accepted in the 2020 DER Order.

accommodate the physical and operational characteristics of an Aggregation comprised primarily of solar resources with some storage.

NYISO Response

The market rules the NYISO proposed and developed for "DER Aggregations" were specifically designed to accommodate two or more different resource types operating together in a single Aggregation. The DER Aggregation participation model is well suited to the operation of (for example) an Aggregation that is comprised of 10-15 MW of solar Intermittent Power Resources ("IPR") plus 5 MW of Energy Storage Resources ("ESR") with 30 MWh of storage capability.[16] That combination, or a similar combination of energy storage and renewable or small thermal generation, is expected to be able to achieve valuable synergies by operating as a DER Aggregation. Solar IPR output during hours when Locational Based Marginal Prices ("LBMP") are relatively low can be used to charge the ESRs. The ESRs can then inject the stored energy during hours when LBMPs are higher or use the stored energy to satisfy market obligations that continue after the sun sets. The controllability the ESRs provide should enable the described DER Aggregation to do a credible job of complying with the Installed Capacity ("ICAP") market requirements that apply to duration limited DER Aggregations.

The DER Aggregation participation model is designed to accommodate resource Aggregations that are capable of following dispatch instructions. For example, in addition to the Aggregation described above, the DER Aggregation model is expected to be effective for an Aggregation that is made up of mostly ESR MW, but that also includes some IPR MW. However, the DER Aggregation model may not be the best choice when there are not sufficient controllable resources (*e.g.*, ESRs or other dispatchable Generators) to conform a DER Aggregation's energy output to the NYISO's dispatch instructions based on either the Aggregation's economics or provided self-schedule, or to operate consistent with the DER Aggregation's ICAP market offer obligation.[17] When an Aggregator's resource set is almost entirely comprised of intermittent, renewable resources that are not capable of following the NYISO's dispatch instructions (*e.g.*, wind or solar IPRs), the Aggregator will need to make economically efficient choices about how best to assemble its available resources into one or more Aggregations. The NYISO's settlement rules provide the transparent market signals an

[16] It is difficult for the NYISO to estimate the minimum ratio of ESR MWs and MWh to solar IPR MWs needed to provide sufficient control to make the DER Aggregation participation model the optimal choice. Decisions that the Aggregator makes about how its Aggregation will operate are important to determining whether a set of aggregated resources should operate as a DER Aggregation. The Aggregator decides how many MW of ICAP/UCAP to sell from its DER Aggregation, and the duration of that Capacity obligation. The Aggregator will be expected to use the Energy and Ancillary Services offers it submits and the operation of its ESRs and its other flexible resources to match the output of its DER Aggregation to the dispatch it receives from the NYISO. If a DER Aggregation cannot meet its schedule or dispatch, the NYISO expects the Market Participant to timely notify the NYISO of the need for a derate or outage. Resource-specific factors, such as output predictability and quantity, are also relevant.

[17] Resources are required to submit their Normal Upper Operating Limit in their Bids. The Normal Upper Operating Limit can be modified after the applicable Bid window has closed when the Resource requests that the ISO derate its Capacity or the ISO derates the Resource's capacity. *See* Services Tariff Sec. 2.14 (definition of "Normal Upper Operating Limit").

Aggregator needs to make prudent decisions. The accepted DER rules provide a broad range of configuration options that allow an Aggregator to configure its Aggregations appropriately. The NYISO provides an example demonstrating how the accepted DER rules permit an Aggregator to flexibly assemble its available resources into one or more Aggregations below.

The NYISO's rules for homogeneous renewable IPR Aggregations apply the rules that the NYISO has been improving for more than a decade to accommodate IPRs. The rules the NYISO developed specifically to address participation by solar IPRs are a better match to the operating characteristics of Aggregations of solar IPRs than the more generic rules the NYISO developed for DER Aggregations. Because they are not capable of following Base Point Signals to produce additional Energy based on economic offers, solar IPRs are excused from persistent undergeneration charges and are paid for all of their output, except when the NYISO imposes a Wind or Solar Output Limit to address a reliability issue.[18] For the reasons explained below, it would be unjust, unreasonable, unduly discriminatory, and inconsistent with the NYISO's market design for the Commission to excuse resources that *are* capable of following the NYISO's dispatch instructions (*e.g.*, ESRs) from doing so simply because an Aggregator chooses to include an ESR in an Aggregation of solar IPRs that cannot follow dispatch instructions.

The Commission asks why the NYISO did not also develop a set of market rules to accommodate "heterogeneous Aggregations that include mostly one resource type. For example, please explain how the NYISO's DER Aggregation rules accommodate the physical and operational characteristics of an Aggregation comprised primarily of solar resources with some storage." The issues raised by the Commission's question are multi-faceted, so the NYISO provides a three-part response below.

First, the NYISO's Tariffs provide transparent market signals to inform developers and investors of the types of resources and combination of resources that can best meet the needs of New York's electric system.[19] The accepted DER rules let Aggregators choose how to assemble their DER into one or more Aggregations.[20] Aggregators are expected to make prudent decisions about how best to configure their available resources consistent with the NYISO's Tariff rules.

For example, assume a hypothetical Aggregator has assembled a set of resources that consists of 12 MW of solar IPRs, plus 1 MW of ESRs. In this hypothetical example, all of the

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[18] *See* Services Tariff Sections 2.3 (definition of Compensable Overgeneration), 2.23 (definition of Wind or Solar Output Limit), 15.3A.1.1 and 15.3A.2.5.

[19] The DER rules incorporate the NYISO's accepted settlement rules that apply to *all* NYCA resources to provide transparent signals to Aggregators. The settlement rules penalize Suppliers if they persistently fail to provide the MW they are dispatched to provide. *See* Services Tariff Section 15.3A.1. The NYISO's settlement rules do not ordinarily pay for overgeneration that exceeds 3% of a Resource's Normal Upper Operating Limit. *See* the definition of Compensable Overgeneration in Section 2.3 of the Services Tariff. However, because they are not capable of following Base Point Signals, IPRs are excused from persistent undergeneration charges and are paid for all of their output, except when the NYISO imposes a Wind or Solar Output Limit to address a reliability issue. *See* Services Tariff Sections 2.3 (definition of Compensable Overgeneration), 2.23 (definition of Wind or Solar Output Limit), 15.3A.1.1 and 15.3A.2.3-5.

[20] An individual DER may only participate in one Aggregation.

Aggregator's resources are aggregated at the same Transmission Node. The Aggregator could choose to (i) have all of the resources participate as a single DER Aggregation; or it could (ii) form two separate Aggregations—a 12 MW homogeneous solar IPR Aggregation, and a 1 MW homogeneous ESR Aggregation; or it could, (iii) form two separate Aggregations, a DER Aggregation consisting of the 1 MW ESRs plus 2 to 3 MW of solar IPRs, with the remaining 8 to 9 MW of solar IPRs participating in a homogeneous solar IPR Aggregation.[21] The NYISO expects that resource combinations (ii) or (iii) will likely be more financially lucrative than option (i) because, for the reasons the NYISO previously explained, the market participation rules that apply to heterogenous DER Aggregations are not well suited to an Aggregation mix that is almost exclusively comprised of resources that cannot follow the NYISO's commitment or dispatch instructions to provide energy, such as solar IPRs.[22]

The NYISO does not believe the market participation choices that the Aggregator needs to make in the example above present a problem that the Commission needs to address. The DER rules that the Commission accepted in its 2020 DER Order provide financial signals to Aggregators about how best to assemble their available resources into Aggregations. The Commission should expect Aggregators to make prudent choices about how they organize their participating resources into Aggregations.

Second, it would be unjust, unreasonable, unduly discriminatory, and inconsistent with the NYISO's market design for the Commission to excuse resources that are capable of following the NYISO's dispatch instructions (*e.g.*, ESRs) from doing so simply because an Aggregator elects to include the ESRs in an Aggregation of other resources that cannot follow dispatch instructions. Over the next decade New York will become increasingly dependent on IPRs to provide Energy as its generation fleet changes to achieve New York State's Climate Leadership and Community Protection Act ("CLCPA") goals. As New York's reliance on variable IPR Energy output grows, the importance and value of having dispatchable resources available to address the volatility of IPR output will similarly increase. When IPR output exceeds the forecast, ESRs can rapidly decrease their output or use the additional Energy the IPRs produce to charge. When IPR output is less than forecast, ESRs can inject Energy to help make up the difference. However, the NYISO will not be able to schedule Energy injections or withdrawals by an ESR that the Commission allows to participate in the ISO-Administered Markets as if it is an inflexible resource. Instead, via its uninstructed operation, such an ESR might: (i) become a source of additional divergence between expected and actual power flows, and (ii) require the NYISO to procure additional Regulation Service to counteract the ESR's uninstructed operation. Consumers will pay for the resulting market inefficiencies.

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[21] If some or all of the ESR(s) and some or all of the solar IPR(s) are located behind a single point of injection/point of withdrawal, then the Co-located Storage Resources ("CSR") participation model would also be available. The minimum size for participation as a CSR is 100 kW for the ESR(s) and one MW for the solar IPR(s). Under the CSR rules the participating solar IPRs would be independently dispatched as a solar IPR and the participating ESRs would be independently dispatched as an ESR. The NYISO expects to implement its CSR participation model in December of 2021. *See New York Independent System Operator, Inc*., 174 FERC ¶ 61,242 (2021).

[22] Additional discussion of why the DER Aggregation participation model is not the best option for an Aggregation that is comprised almost entirely of solar IPRs is included on pages 34 to 35 of the NYISO Answer.

Except when the NYISO has imposed a Wind and Solar Output Limit to address excessive IPR output that is causing an immediate reliability problem, solar and wind IPRs are paid for all of the Energy they produce, and are not subject to undergeneration penalties.[23] If fully controllable ESRs are permitted to participate in the ISO-Administered Markets as if they are IPRs that are not required to follow the NYISO's dispatch instructions, the NYISO expects such ESRs will chase price.[24] Uninstructed price chasing is inefficient and may cause reliability concerns because it interferes with the NYISO's selection of a least-cost solution to transmission congestion.[25] The NYISO does not allow price chasing in its markets,[26] and the Commission has recognized that the NYISO's rejection of price chasing is a valid method of preventing overgeneration.[27] It would be unduly discriminatory and inconsistent with the NYISO's long-accepted market design for the Commission to permit an ESR that is capable of following the NYISO's dispatch instructions to operate on an uninstructed basis simply because an Aggregator chooses to include the ESR in an Aggregation with other resources that cannot follow dispatch instructions. The Aggregator should make a more prudent choice about how it aggregates its available resources or accept the financial consequences of its wholesale market participation decision consistent with the rules the Commission accepted in its 2020 DER Order.

Finally, the NYISO's accepted DER market rules include aggregation options that allow a broad range of different resource types and resource combinations to participate under the DER Aggregation rules. The NYISO's goal was to allow participation by the broadest possible range

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[23] *See* Market Services Tariff Sections 2.3 (definition of Compensable Overgeneration), 15.3A.2.5 (exemption from persistent undergeneration charges).

[24] Section 205 of the Federal Power Act prohibits *undue* discrimination. Wind and solar IPRs are subject to special operating and settlement rules because they are not capable of following the NYISO's dispatch instructions. It would not be just or reasonable to apply the special operating and settlement rules that the Commission accepted for wind and solar IPRs to resources that are fully capable of following the NYISO's dispatch instructions. Generators that are capable of following the NYISO's dispatch instructions (including ESRs) should be required to do so.

[25] The NYISO selects a least-cost resource or set of resources to respond to transmission congestion based on all available offers and shift factors on the relevant constraint. At the time NYISO issues its dispatch instructions it will not know whether, or the extent to which, price chasing resources will also respond on an uninstructed basis. If price-chasing resources also respond, the result will be overgeneration that leads to other inefficient out of market actions that mute the price signals and undermine the efficiency of the *ex-ante* wholesale energy market. As a result, the NYISO may be required to pay uplift to the resources that it dispatched.

[26] In New York, Generators that are capable of following dispatch instructions are not paid for output that exceeds their NYISO-issued dispatch by more than 3% of the Generator's Normal Upper Operating Limit. *See* Market Services Tariff Section 2.3 (definition of Compensable Overgeneration). This requirement was accepted by the Commission as one of the NYISO's "SMD II" market reforms in 2005 and has been in place ever since.

[27] *See, e.g., New York Independent System Operator, Inc*., 167 FERC ¶ 61,057 at PP 25, 58, 61 (2019) ("…NYISO states that its New York Control Area generation fleet responds well to NYISO-issued basepoints and instructions due to three rules: (1) NYISO does not permit units to self-commit intra-hour to chase prices; (2) generators that self-schedule are not eligible to receive uplift or set price; and (3) a generator producing above its basepoint is only compensated for overproduction that exceeds the basepoint by 3 percent or less of the generator's upper operating limit…. [W]e believe that NYISO's existing practices adequately address potential concerns related to over-generation, and that it is not necessary for the Commission to require further changes to address potential over-generation at this time….").

of DER. Issue 3 (Participation Model) Question 1(a) appears to, instead, be focused on optimizing participation by one specific resource configuration.[28] As explained in the NYISO's response to Issue 8 Question 1(a), the NYISO is working diligently to implement the rules that the Commission accepted in its 2020 DER Order by the end of 2022. If the NYISO is now instructed to change how it implements the DER rules that the Commission accepted in its 2020 DER Order, then the NYISO's 2022 implementation goal may not be met, and DER implementation may be delayed for *all* resources. The NYISO respectfully requests that the Commission permit the NYISO to complete and implement its previously accepted DER design and allow the NYISO and its stakeholders to gain some operational experience implementing DERs before the Commission requires that design to be modified or expanded.

The NYISO recognizes that owners of existing (primarily wind) IPRs may want to add an ESR that shares the existing IPR's point of injection/point of withdrawal. The CSR participation model is expected to be available to accommodate the addition of an ESR that is 100 kW or larger at the location of an existing wind or solar IPR by the end of 2021, so there will be a participation model available to address this need. The integrated hybrid storage resource participation model the NYISO is currently working with its stakeholders to develop might be a second option. After the NYISO and its stakeholders finish developing a participation model for integrated hybrid storage resources in 2022, they will review the available DER, integrated hybrid and co-located participation options and determine whether developing additional participation models is necessary and should be prioritized.

(b) Given NYISO's statement that its resource-specific operating rules will better reflect the operating characteristics of the resources in a homogeneous Aggregation than the DER Aggregation rules applicable to heterogeneous Aggregations, please explain how NYISO's proposal would not present a barrier to the formation of heterogeneous Aggregations.

NYISO Response

An overarching goal of Order No. 2222 is to permit DERs to participate in ISO and RTO markets on an equivalent basis with existing resources. Order No. 2222 does not require each

[28] The NYISO's stakeholders proposed *many* different configurations that would optimize participation by specific sets of DER resources. All of the proposals (including the resource configuration that the Commission suggests in its question) require additional market rules and additional software to implement. The NYISO could not include all of the various stakeholder proposals in its initial DER implementation. The NYISO's inability to include rules to optimize participation by specific resource configurations does not make the DER rules the Commission accepted in 2020 unjust and unreasonable. *See, e.g., PJM Interconnection, LLC*, 176 FERC ¶ 61,056 at P 37 (2021) ("As PJM notes, PJM and its stakeholders closely considered both the marginal and average [Effective Load Carrying Capability] approaches, but ultimately decided in favor of the average approach. While a marginal approach may also be designed in such a way that it is just and reasonable and not unduly discriminatory, that fact does not render PJM's proposed average approach unjust and unreasonable."). *See also, Petal Gas Storage, L.L.C. v. FERC*, 496 F.3d 695, 703 (D.C. Cir. 2007) ("FERC is not required to choose the best solution, only a reasonable one."); *Wis. Pub. Power, Inc. v. FERC*, 493 F.3d 239, 266 (D.C. Cir. 2007) ("Merely because petitioners can conceive of a refund allocation method that they believe would be superior to the one FERC approved does not mean that FERC erred in concluding the latter was just and reasonable. Again, reasonableness is a zone, not a pinpoint.").

and every DER participation model an ISO or RTO proposes to optimally accommodate all possible DER resource configurations. That would be impossible and impractical because DERs cover a broad range of resource types with very different operating characteristics, and the mathematical models underlying the SCUC, RTC, and RTD software that supports day ahead and real-time energy markets cannot accommodate the potentially infinite combinations of resource characteristics. Instead, the NYISO has worked to accommodate in its software a reasonable set of resource attributes that will allow market participants to represent their resource's operating characteristics. For the same reasons the NYISO has different market rules that apply to the operation of combustion turbines, wind or solar IPRs, and ESRs outside the DER context, it is necessary to reasonably incorporate the operating characteristics of DER and Aggregations of DER in order to permit Aggregators to manage their Aggregation mix and reflect the capabilities of the Aggregation in their wholesale market offers. To treat each resource fairly, the June 2019 Filing proposed several different DER resource participation options for Aggregators to choose from. The NYISO achieves the flexibility the Commission expects by permitting Aggregators to decide how many different Aggregations to create, and which resources to assign to each Aggregation. It is not necessary to focus on whether the selected Aggregations are "homogeneous" or "heterogeneous." The NYISO's accepted DER market design achieves Order No. 2222's overall goal.

The NYISO's currently effective market rules, accepted DER market rules, and proposed Order No. 2222 compliance Tariff revisions do not present a barrier to the formation of heterogeneous aggregations. Instead, they provide transparent market signals to inform developers and investors of the types of resources and combination of resources that can best meet the needs of New York's electric system. The market signals the NYISO provides inform the Aggregator's decision about when it should (and should not) choose to create a heterogeneous DER Aggregation.

In particular:

1. The NYISO's settlement rules provide transparent market signals that Aggregators are expected to consider in structuring their Aggregations.

2. The NYISO's accepted DER rules include both heterogeneous and homogeneous participation models and let the Aggregator decide how to divide its resources into one or several different heterogeneous and/or homogeneous Aggregations.

3. Some DER participation models are better suited to particular resource configurations than others. The NYISO's DER Aggregation model is best suited to a set of resources that, in aggregate, is capable of following the NYISO's dispatch instructions. If an Aggregator has assembled a diverse set of resources that, in aggregate, is not capable of following the NYISO's dispatch instructions then the Aggregator may want to create two or more different Aggregations in order to optimize the financial benefits it receives from the resources under its control.

4. Because the Aggregator has flexibility in dividing its resources and structuring its Aggregations under the NYISO's accepted DER rules, it isn't necessary for every DER participation model to optimally accommodate all possible resource configurations.

This response incorporates several points the NYISO made in greater detail in its response to Issue 3 (Participation Model) Question 1(a). Please see the NYISO's response to Issue 3 (Participation Model) Question 1(a) for a broader and more complete response to this question.

Commission Question 2

In its answer, NYISO states that, "[i]f an Aggregation that is made up entirely of solar Intermittent Power Resources is permitted to elect to participate as a DER Aggregation, then the Aggregation will be expected to operate to achieve the dispatch that the NYISO issues, may be assessed persistent under-generation charges when it under-delivers, and it won't be paid for output in excess of its dispatch schedule above 3% of the Aggregation's Upper Operating Limit."

(a) Would a DER Aggregation that is composed largely, but not exclusively, of solar resources face similar risks? How would an Aggregator operate such a DER Aggregation to avoid NYISO penalties?

NYISO Response

Please see the NYISO's response to Issue 3 (Participation Model) Question 1(a).

As the NYISO explains in its response to Issue 3 (Participation Model) Question 1(a), the accepted DER and Aggregation market design permits Aggregators to choose how to assemble their available resources into one or more Aggregations. The NYISO does not equate a choice an Aggregator makes about how to configure its available resources into Aggregations a "risk." The NYISO designed the DER Aggregation participation model to accommodate a set of resources that can, on aggregate, follow the NYISO's commitment and dispatch instructions. If an Aggregator chooses to assemble a DER Aggregation that is comprised almost entirely, but not exclusively of solar IPRs, the Aggregator will face similar risk of operating penalties to a DER Aggregation that is comprised entirely of solar resources *if and to the extent* the resulting Aggregation is not able to follow the NYISO's commitment and dispatch instructions.

As the NYISO explains in its response to Issue 3 (Participation Model) Question 1(a), the market rules the Commission accepted in its 2020 DER Order do not require Aggregators to assemble DER Aggregations that cannot meet their performance obligations in real-time. The Aggregator will be able to include some or all of its solar IPRs in a heterogeneous Aggregation that is not subject to performance penalties for being off-dispatch. The transparent financial incentives provided by the NYISO's accepted DER and Aggregation market design will encourage Aggregators to make prudent decisions about how best to configure their available resources consistent with the NYISO's Tariff rules. The NYISO's response to Issue 3 (Participation Model) Question 1(a) provides an example of how an Aggregator might choose to arrange a set of resources that consists of 12 MW of solar IPRs and one MW of ESRs.

Commission Question 3

In its answer, NYISO outlines the resource adequacy problems that could arise by modeling an Aggregation of solar Intermittent Power Resources as a DER Aggregation.

(a) Please explain why similar concerns would not arise with a DER Aggregation that is composed largely, but not exclusively, of solar resources.

NYISO Response

The resource adequacy concerns described on page 35 of the NYISO Answer would arise if an Aggregator elected to operate an Aggregation that is not capable of following the NYISO's commitment and dispatch instructions as a DER Aggregation. However, the market rules the Commission accepted in its 2020 DER Order do not require Aggregators to create such DER Aggregations and the financial incentives provided by the NYISO's accepted DER market design do not encourage an Aggregator to create a DER Aggregation that is almost exclusively comprised of solar IPRs. The NYISO's response to Issue 3 (Participation Model) Question 1(a) provides several examples of how an Aggregator can more efficiently configure and operate its DER Aggregations consistent with the rules the Commission accepted in its 2020 DER Order. The settlement rules that apply to DERs are transparent. Aggregators should be expected to make prudent decisions about how best to configure their available resources consistent with the NYISO's accepted Tariff rules. Please see the NYISO's response to Issue 3 (Participation Model) Question 1(a) for additional information that is responsive to this question.

Commission Question 4

NYISO states that "[r]esources 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." Services Tariff, section 5.12.1 provides that "[i]n order to qualify as an Installed Capacity Supplier or be part of an Aggregation that is qualified as an Installed Capacity Supplier, Generators, controllable transmission projects electrically located in the NYCA, transmission projects with associated incremental transfer capability, and Distributed Energy Resources that have the ability to inject Energy must have obtained Capacity Resource Interconnection Service ("CRIS") pursuant to the applicable provisions of Attachment S to the ISO OATT . . . ." NYISO further states that "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 [Capacity Resource Interconnection Service (CRIS)] . . . ." In its answer, NYISO states that it applies its deliverability requirements for CRIS requests on a comparable basis to all resources that seek to participate in its Capacity market.

(a) Please explain how NYISO will evaluate each individual Distributed Energy Resource seeking to provide Installed Capacity Service in order to award CRIS.

Please provide an overview of how NYISO will evaluate individual Distributed Energy Resources for deliverability as compared to other resources.

NYISO Response

Attachment S of the OATT contains the procedures for the Class Year Interconnection Facilities Study ("Class Year Study") in which a project must participate to obtain CRIS with limited exceptions. The June 2019 Filing proposed revisions to provisions of Attachment S to address the CRIS requirements applicable to DERs. The requirements focus on the DER level, not the asset level (a unit or an asset within a DER) or at the Aggregation level (comprised of multiple DERs).

Pursuant to the Commission-accepted DER and Aggregation rules, DER that consist of a single asset and that can operate for twenty-four hours a day will be evaluated for CRIS like other Resources of the same Resource type.

The NYISO modified the OATT to accommodate a subset of DER that are Resources with Energy Duration Limitations[29] and/or that are comprised of multiple units (of the same or different technology types). Those modifications are described below in parts 1 and 2 of the NYISO's response to this Question.

To qualify as an ICAP Supplier, a Resource must possess CRIS,[30] which is obtained in accordance with Attachment S of the OATT.[31] Attachment S provides the procedures for the Class Year Study,[32] which includes a deliverability analysis that evaluates a project's requested MW of CRIS for facilities larger than 2 MW. CRIS requests are evaluated under the NYISO Deliverability Interconnection Standard to determine whether the requested MW of CRIS are deliverable and to identify and cost allocate any required System Deliverability Upgrades ("SDU") required for a project's requested MW of CRIS to be fully deliverable. Certain resources may also utilize the NYISO's Expedited Deliverability Study process described in response to Issue 3 (Participation Model) Question 4(b).

[29] A Resource with Energy Duration Limitation is defined as "[a] Resource that is not capable of supplying its ICAP equivalent of UCAP sold in each hour of the day due to a run-time limitation, such as an Energy storage limitation or permit restriction, and has elected an Energy Duration Limitation as specified in Section 5.12.14 of the ISO Services Tariff." Services Tariff Sec. 2.18.

[30] CRIS is interconnection service that allows a Developer to interconnect its facility to the New York State Transmission System or Distribution System in accordance with the NYISO Deliverability Interconnection Standard, which allows participation in the NYISO's ICAP market to the extent of the facility's deliverable capacity.

[31] Services Tariff Sec. 5.12.1.

[32] Attachment X details the obligations related to execution of a Class Year Study Agreement and provides a high-level scope of the Class Year Study and Class Year Study procedures, but it incorporates by reference the terms of Attachment S, which provide more detailed Class Year Study procedures.

The Class Year Study's deliverability evaluation is based on the MW level of CRIS requested by the Class Year Project. Currently, Attachment S limits CRIS requests as follows:

- A Behind-the-Meter Net Generation ("BTM:NG") Resource cannot request CRIS in excess of its Net-ICAP;
- A Class Year Transmission Project requesting CRIS in the form of External-to-Rest of State Deliverability Rights ("EDRs") cannot request CRIS in excess of the increase in transfer capability created by its project; and
- Other generation and Class Year Transmission Projects cannot request CRIS in excess of their nameplate.[33]

1. CRIS Requests for Resources with Energy Duration Limitations and Multi-Technology Resources

The NYISO has previously developed, and the Commission has accepted, Resource-specific requirements for the maximum CRIS amounts that certain specific Resource types can request in a Class Year Study.[34] These Resource-specific requirements are necessary in light of the physical and operational characteristics of such facilities.

As noted above, DER Aggregations may include Resources with Energy Duration Limitations and/or be comprised of multiple units (of the same or different technology type). Resources with Energy Duration Limitations will have an expected maximum injection capability for the Developer-selected duration. Multi-unit facilities will have a nameplate that is the collective injection capability of all units within the facility. Multi-unit facilities that include Resources with Energy Duration Limitations also have duration-specific injection capabilities that impact the facility of which they are a part. These characteristics necessitated the tariff revisions that the Commission accepted in its 2020 DER Order to establish the level of CRIS multi-unit facilities and Resources with an Energy Duration Limitation may request, the manner in which their CRIS requests will be evaluated, and the manner in which proposed modifications and CRIS transfers will be processed.

With respect to Resources with an Energy Duration Limitation, Section 25.8.1 of Attachment S of the OATT that was accepted in the 2020 DER Order provides that, if the Class Year Project is a Resource with Energy Duration Limitations, "the requested MW level of CRIS cannot exceed the minimum of the following: (a) its expected maximum injection capability in MW for the Developer-selected duration; (b) the nameplate capacity of the facility (*i.e.*, injection

[33] *See* OATT Attachment S, Section 25.8.1.

[34] *See, e.g.*, *New York Indep. Sys. Operator, Inc*., 155 FERC ¶ 61,166 (2016); *New York Indep. Sys. Operator, Inc*., 124 FERC ¶ 61,238 (2008) (accepting tariff revisions providing for a maximum requested CRIS level for BTM:NG Resources); *New York Indep. System Operator, Inc*.; Letter Order, Docket No. ER118-1668-000 (July 13, 2018) (accepting tariff revisions providing for a maximum requested CRIS level for Class Year Transmission Projects requesting EDRs).

capability of the facility expressed in MW); or (c) the sum of facility's requested and existing ERIS, as applicable…."

With respect to multi-unit facilities, Section 25.8.1 clarifies how a CRIS request would be treated for a multi-unit facility. For CRIS requests by facilities comprised of multiple units (of the same or several different technology types), Attachment S applies the following two requirements:

a. The requested MW level of CRIS must be requested at the DER level.

   - CRIS cannot be requested at the unit/asset level for each unit behind the same facility meter (*i.e.*, for each unit that makes up one Small Generating Facility).

   - CRIS cannot be requested at an Aggregation level; it is a facility (which may ultimately join an Aggregation) that is evaluated for CRIS.

b. The MW level of CRIS requested by the Developer cannot exceed the minimum of the following: (a) its expected maximum injection capability in MW for the Developer-selected duration (only applicable if the facility includes a Resource with Energy Duration Limitations); (b) the nameplate capacity of the facility (*i.e.*, collective injection capability of all units within the facility expressed in MW); or (c) the sum of facility's requested and existing ERIS, as applicable.

The accepted rules that limit the amount of CRIS that can be requested by a Resource with an Energy Duration Limitation or a facility comprised by multiple units serve the following purpose:

- The "expected maximum injection capability in MW for the Developer-selected duration" prong captures the amount of capacity that a facility would be able to provide under the duration requirements to be an Installed Capacity Supplier;

- The "nameplate capacity" prong captures the facility's maximum injection capability; and

- The "sum of facility's requested and existing ERIS" prong captures the maximum amount of energy the facility is permitted to inject into the system in accordance with the facility's ERIS level determined in the applicable interconnection studies.

These proposed limitations are consistent with limits placed on other facilities' CRIS requests, all of which have been designed to align a facility's maximum CRIS level as close as possible to the facility's maximum possible ICAP market contribution. In this instance, the lowest value determined by the three prongs best reflects the above Resource type's maximum possible ICAP market contribution.

In addition to the above requirements of Section 25.8.1, the 2020 DER Order accepted related revisions in Attachments S, X, and Z of the OATT:

- Revisions to Section 32.1.1.7 of Attachment Z that refer back to Section 25.8.1 of Attachment S with regard to the maximum MW levels of CRIS that may be requested by a Small Generating Facility;

- Revisions requiring information sufficient to determine the MW levels for each of the above limitations, specifically revisions to the Interconnection Request forms in Section 30.14, Appendix 1 of Attachment X, Section 32.5 of Attachment Z, and the data form appended to the Interconnection Facilities Study Agreement ("Class Year Study Agreement") in Section 30.14, Appendix 2 of Attachment X; and

- Revisions to Sections 25.9.3.1 and 25.9.4 of Attachment S to clarify that CRIS obtained by a multi-unit facility cannot be split up into CRIS for each unit. A unit within a multi-unit facility that elects to reconfigure its interconnection such that it becomes part of another facility (*i.e.*, an alternative composition) cannot take with it a pro-rated portion of the multi-unit facility's CRIS. A multi-unit facility's CRIS can only be transferred in whole, regardless of whether the facility modifies its original composition.

2. Deliverability Methodology Applied to Resources with Energy Duration Limitations and Multi-Technology Resources

The Commission's 2020 DER Order also accepted tariff revisions that clarified the manner in which the Class Year Study deliverability evaluation will study Resources with Energy Duration Limitations and facilities comprised of units of different technologies. Section 25.7.8.2.3 of Attachment S sets forth the methodology for the deliverability evaluation of the requested MW of CRIS. Pursuant to Section 25.7.8.2.3, the MW of CRIS requested by a Class Year Project represent Installed Capacity and are derated to an Unforced Capacity ("UCAP") value used for the deliverability analysis.[35]

The deration factor used in the deliverability study incorporates availability and is based on the UCAP or Net-UCAP, as applicable, of the facility. This factor, unique to the deliverability study, is referred to as the UCAP Deration Factor ("UCDF"). Section 25.7.8.2.3 of Attachment S of the OATT provides that the UCDF used for the deliverability study is the average from historic ICAP to UCAP translations on a Capacity Region basis, as determined in accordance with ISO Procedures. Section 25.7.8.2.3 of Attachment S further provides that the UCDF used will be the average Equivalent Forced Outage Rate on Demand, which will be used for all ICAP providers that are not Intermittent Power Resources. The UCDF for Intermittent Power Resources is calculated based on their Resource type in accordance with ISO Procedures.

[35] At the conclusion of the analysis, the NYISO will reconvert only the deliverable MW and report them in terms of MW of Installed Capacity using the same derating factor utilized at the beginning of the deliverability analysis.

The 2020 DER Order also accepted tariff revisions that clarified that the MW of CRIS requested by a Resource with an Energy Duration Limitation will represent Installed Capacity based on the Developer-selected duration (*i.e.*, its expected maximum injection capability in MW hours for the Developer-selected duration) and will also be derated for the deliverability analysis. The NYISO further revised Section 25.7.8.2.3 of Attachment S to specify the manner in which Resources with Energy Duration Limitations and multi-technology facilities will be derated in the deliverability study. Under these requirements Resources with Energy Duration Limitations are derated to reflect the Developer's selected duration. For multi-technology facilities (facilities comprised of units of different technologies), the applicable derate will be determined using a blended UCDF that combines the UCDF of the individual units within the facility. However, if the facility includes load reduction, the load reduction would not impact the UCDF of the facility.

(b) Are all resources evaluated for deliverability through NYISO's class year process? Are different-sized resources treated differently during this deliverability analysis? Please explain the reason for any different treatment applied to Distributed Energy Resources.

NYISO Response

All Resources are not required to go through the NYISO's full Class Year Study process to obtain CRIS. In 2019 the NYISO proposed, and the Commission accepted, a new Expedited Deliverability Study process under which a Developer that is only seeking CRIS for its project in the NYISO's interconnection process may be studied outside the Class Year Study process to obtain CRIS for Deliverable MW that do not require an SDU. The Expedited Deliverability Study rules provide Developers with more frequent opportunities and an abbreviated study process for qualifying projects to obtain CRIS. The NYISO's deliverability analysis is the same for all projects utilizing the Expedited Deliverability Study process, regardless of size.

In an Expedited Deliverability Study, the Developer may obtain full or partial CRIS based on the deliverability of its project. If the study determines that the Developer's project is not deliverable or not fully deliverable, the Developer may enter into the next Open Class Year for the evaluation or identification of any SDUs required to make the project deliverable. The Developer may also enter into a subsequent Expedited Deliverability Study for a new determination of its requested CRIS based on changed circumstances, such as changes to the system since the last study.

The Expedited Deliverability Study provides Developers that are only seeking CRIS with an expedited opportunity to obtain those CRIS rights without having to participate in a full Class Year Study. Generally, projects that seek CRIS only include, among others, Large Facilities and Small Generating Facilities that already have ERIS but subsequently seek to obtain CRIS or increase their CRIS, and generating facilities that do not interconnect pursuant to the NYISO's FERC jurisdictional requirements (*e.g.* distributed resources connecting to the Distribution System).

The Expedited Deliverability Study process benefit a large number of Developers by lowering the barriers and time frame to obtaining CRIS for their facilities and providing them with additional flexibility in their participation in the NYISO's interconnection process. This includes a faster study process and lower study deposits than those required to participate in the Class Year CRIS-only evaluation. In addition, by addressing a large number of CRIS requests in a separate study, the NYISO may have opportunities to expedite the analysis for those Developers participating in the Class Year Study.

A Developer that is only requesting CRIS through the NYISO's interconnection process and satisfies the other eligibility requirements described below is eligible to use the Expedited Deliverability Study. This includes a Developer requesting CRIS for: (i) new or existing facilities with no CRIS, (ii) for small generators that are subject to the NYISO's SGIP, (iii) for facilities that were not subject to the NYISO's interconnection procedures (*e.g.,* a Developer seeking CRIS for a DER that was studied by a Distribution Utility), and (iv) for requests to increase CRIS for facilities with existing CRIS. The NYISO does not cap the collective amount of CRIS that may be evaluated in the Expedited Deliverability Study or to limit the projects eligible to participate in the study to those under a specified MW level.

To become a member of an Expedited Deliverability Study, a Developer that is only requesting CRIS must satisfy the following requirements. The Developer must provide notice to the NYISO by the start date of the Expedited Deliverability Study.[36] The Developer's project must be in service or have completed one of the following studies, as applicable: a Class Year Study for ERIS, a System Impact Study under the SGIP, or a utility interconnection study if the facility is not subject to the NYISO's interconnection procedures.[37] In addition, the Developer must, if applicable, have satisfied the data submission requirements for Class Year Projects requesting CRIS in a Mitigated Capacity Zone and have such data submission deemed completed by the NYISO by the study start date.[38] Finally, the Developer must also satisfy the requirements for the completion of a *pro forma* Expedited Deliverability Study Agreement, submit the required deposit, and submit the required technical data.[39]

Additionally, the NYISO's Interconnection Procedures do not require a Developer of a generating facility that is requesting 2 MW or less of CRIS to be evaluated for deliverability under the NYISO Deliverability Interconnection Standard. The rule reflects the NYISO's long-standing *de minimis* threshold under which generating facilities 2 MW and under are not subject to a deliverability evaluation

[36] OATT Section 25.5.9.2.1.

[37] *Id*.

[38] OATT Section 25.5.9.2.1.

[39] OATT Sections 25.5.9.2.1, 25.5.9.2.2.

Commission Question 5

NYISO states that an Aggregation may only qualify to offer the Ancillary Services that all individual resources in the Aggregation are qualified to provide, to maintain compliance with North American Electric Reliability Corporation ("NERC"), Northeast Power Coordinating Council ("NPCC"), and New York State Reliability Committee reliability rules. In its answer, NYISO states that, pursuant to NPCC Directory 5, Requirement 6, NYISO is required to ensure that all resources it relies upon to provide Operating Reserves can sustain their operating for at least one hour following activation. NYISO explains that it can only ensure this requirement is satisfied if it knows that all of the resources in an Aggregation that provide Operating Reserves can satisfy the NPCC sustainability requirement.

(a) Please explain in more detail how NYISO's requirement that an Aggregation may only qualify to offer the Ancillary Services that all individual facilities in the Aggregation are qualified to provide is necessary to comply with NERC, NPCC (other than NPCC Directory 5, Requirement 6, if applicable), and New York State Reliability Committee reliability rules. Why must NYISO ensure that each Distributed Energy Resource in an Aggregation can satisfy these requirements rather than the Aggregation as a whole? Do these rules prevent a Distributed Energy Resource from providing Ancillary Services up to the amount that it is technically capable of providing through aggregation?

NYISO Response

The tariff revisions accepted by the 2020 DER Order included rules related to the ability of Aggregations to provide Ancillary Services in the NYISO-administered markets. The accepted tariff revisions permit any Aggregation, whether a DER Aggregation or a single Resource Type (homogeneous) Aggregation, to provide Regulation Service, Spinning Reserve (*i.e.*, 10-Minute Synchronized Reserve), 10-Minute Non-Synchronized Reserve, and 30-Minute Reserve if all of the individual DER within the Aggregation are capable of providing the particular product individually.

The market rules accepted in the 2020 DER Order do not permit Aggregations to provide Voltage Support Service ("VSS"). Aggregations are not permitted to provide VSS because the NYISO expects the majority of DERs to be located on the Distribution System and it is unlikely that the Transmission System will realize measurable or beneficial voltage support contributions from DERs that are interconnected to the Distribution System.[40]

The NYISO procures Ancillary Services, including Operating Reserves, to support grid reliability. The NYISO relies on Operating Reserve providers to provide Energy when needed to maintain grid reliability when system conditions result in shortfalls of Energy. Typically, this occurs when part of the grid fails, known as a contingency. Often contingencies result in the loss

[40] DERs may be able to provide voltage support service to their local Distribution Utility consistent with any applicable retail tariffs.

of Energy supply or loss of transmission capability to continue to serve load reliably. The NYISO has, throughout the evolution of the Energy and Ancillary Services Markets, required suppliers to have the capability to sustain Energy output following the conversion of Operating Reserves to Energy,[41] and the NYISO has required that suppliers only qualify as eligible to provide the Operating Reserve products that the least capable technologies, when grouped together, can support. This requirement is not limited to DERs. For example, Behind-the-Meter Net Generation Resources that are comprised of more than one generating unit and Demand Side Resources that facilitate their demand reduction utilizing a Local Generator (unless the Local Generator utilizes inverter-based energy storage resources) are not eligible to provide Spinning Reserves.[42]

Suppliers are eligible to provide Spinning Reserve when they Bid flexibly (ISO-Committed or Self-Committed) and "are operating withing the dispatchable portion of their operating range, are capable of responding to ISO instructions to change their output level within ten minutes, and … meet the criteria set forth in the ISO Procedures."[43] Under the DER and Aggregation participation model accepted by the Commission in the 2020 DER Order the NYISO will issues dispatch instructions at the Aggregation level. The NYISO is not expected to know the real-time operational status (online or offline) or capability of each DER in an Aggregation, nor will the NYISO schedule and dispatch the individual DER that participate in an Aggregation.[44] These elements of the market design limit the NYISO's ability to verify that the individual DER utilized by the Aggregator satisfy established Operating Reserve and Regulation Service reliability requirements.

1. Ability of Single Resource Type Aggregations to provide Operating Reserves and Regulation Service

Single Resource Type Aggregations will be eligible to qualify to provide Spinning, 10-Minute Non-Synchronous, 30-Minute Reserves, and Regulation Service based on the their Resource type:

> **Energy Storage Resource Aggregations:** An Aggregation comprising only inverter-based ESRs is eligible to provide Spinning Reserve, 30-Minute Reserve, and Regulation Service. Inverter-based ESRs are eligible to provide synchronous Operating Reserves

[41] *See* Services Tariff Sec. 4.4.3.1.1 (requiring Resources to meet applicable Energy sustainability requirements established by the North American Electric Reliability Corporation, NPCC, and/or New York State Reliability Council). When the NYISO enters Reserve Pickup Corrective Action Mode, Energy schedules for ESRs are determined by the Resource's telemetered state of charge. *Id.*

[42] Services Tariff Sec. 2.15 (definition of Operating Reserves).

[43] Services Tariff Sec. 15.4.1.2.1.

[44] Obtaining online/offline status, State of Charge and similar information for each DER that participates in an Aggregation would require significantly more granular (and expensive) metering and telemetry. Incorporating the status (on/off) and State of Charge (where applicable) of each and every DER into the NYISO's dispatch would require the NYISO to devote significant additional computational resources to implement the DER and Aggregation participation model. The additional requirements could prevent NYISO from timely issuing dispatch instructions in real-time.

when withdrawing or injecting Energy, and when idle. Therefore, the operating status of an asset within the Aggregation is not considered. An ESR Aggregation's eligibility to provide Operating Reserves and Regulation Service is the same as it would be for a stand-alone ESR.

Solar or Wind Intermittent Power Resource Aggregations: An Aggregation comprising only wind or solar facilities is ineligible to provide Operating Reserves. Due to these Resources' intermittency, the NYISO is unable to be certain that a Single Resource Type Aggregation of wind or solar resources will be able to maintain their output for at least one hour, consistent with the applicable NPCC Reliability Rule.[45] Aggregations of wind or solar may seek to qualify to provide Regulation Service, but if they do so, the Aggregation would not be compensated for any actual overgeneration, and would not be exempted from applicable persistent undergeneration charges. A wind or solar IPR Aggregation's eligibility to provide Operating Reserves and Regulation Service is the same as it would be for a stand-alone wind or solar IPR.

Generator Aggregations: An Aggregation of fully dispatchable (*e.g.*, thermal) Generators will be eligible to provide 10-Minute Non-Synchronized Reserve, 30-Minute Reserve, and Regulation Service. These Aggregations are not eligible to provide synchronous reserves because the NYISO will not know the real-time operational status (online or offline) or capability of each Generator in the Aggregation, and therefore will not know if the Generator providing the Operating Reserves is operating withing the dispatchable portion of its operating range, as required by Section 15.4.1.2.1 of the Services Tariff. The Operating Reserve products an Aggregation of Generators can provide is not the same as a stand-alone fully-dispatchable Generator, which would be eligible to provide synchronous Operating Reserves. This difference exists because the NYISO will not know the status (online or offline) of all of the Generators that participate in an Aggregation.

Aggregations of Demand Side Resources: Aggregations of Demand Side Resources will be eligible to provide Operating Reserves and Regulation. The specific Operating Reserve products that the Aggregation is eligible to provide depends upon how the individual Demand Side Resources facilitate Demand Reductions. If each Demand Side Resource in an Aggregation facilitates its Demand Reductions via (i) reduction of on-site Load, or (ii) utilizing a Local Generator that is an inverter-based energy storage resource, then the Aggregation is eligible to provide synchronous reserve products. If, however, one or more Demand Side Resources in the Aggregation facilitates its Demand Reduction via a Local Generator that is not an inverter-based energy storage resource, then the Aggregation will only be eligible to provide non-synchronous reserve products. This

[45] *See* Northeast Power Coordinating Council Directory 5 (Reserve) at R6 (Sustainability of Operating Reserve) ("A Balancing Authority's synchronized reserve, ten-minute reserve, and thirty-minute reserve, if activated, shall be sustainable for at least one hour from the time of activation.").

treatment is consistent with the NYISO's existing rules applicable to participants in the Demand Side Ancillary Services Program.[46]

2. Ability of heterogeneous DER Aggregations to provide Operating Reserves and Regulation Service

A number of considerations inform the eligibility of heterogeneous DER Aggregations to provide Ancillary Services in the NYCA. When a heterogeneous DER Aggregation is comprised of several generating units and is dispatched to provide Spinning Reserve, the NYISO will not know whether the next increment of output will be provided by a unit that is online and synchronized to the system, or by a resource that has not started-up and synchronized, and is not eligible to provide Spinning Reserve. The concern that the NYISO will not know whether the next increment of output will be provided by a Generator synchronized to the system similarly affects the Aggregation's ability to provide Regulation Service (which requires the Aggregation to respond to Automatic Generation Control signals that are issued every six seconds). The Ancillary Services a heterogeneous DER Aggregation may provide, therefore, are limited by its component facilities.

The June 2019 Filing explained the circumstances under which various Aggregation configurations will be permitted to provide Regulation Service and Operating Reserves and the reasons for those determinations.[47] They are:

> **Regulation Service:** An Aggregation may provide Regulation Service when all of the individual facilities in the Aggregation meet the eligibility requirements to provide this service, except as follows.
>
> An Aggregation that is comprised of 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.[48] 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, above the unit's Minimum Generation Level, and be capable of responding to six-second dispatch signals. When an Aggregation that is 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 online and synchronized to the system. Therefore, Aggregations with at least one generating unit, except for generating units utilizing inverter-based energy storage technology, will be prohibited from providing Regulation Service. Because facilities utilizing inverter-based energy storage technology

[46] *See, e.g.*, Services Tariff Sec. 2.15 (definition of Operating Reserves) ("Spinning Reserves may not be provided by a Demand Side Resource that facilitates demand reduction using a Local Generator, unless that Local Generator utilizes inverter-based energy storage technology….").

[47] June 2019 Filing at 42-45.

[48] Accepted revisions to Services Tariff Sections 4.2.1.3.1, 15.3.

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.

Operating Reserves: The NYISO procures several different Operating Reserves products, including: (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). As with other Resources, 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.[49]

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.[50] Aggregations comprised of one or more generating units, and Aggregations that include Demand Side Resource(s) where at least one Demand Side Resource facilitates its Demand Reduction by using a Local Generator, 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.

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.[51]

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) 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.

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

[50] Accepted revisions to Services Tariff Sections 2.15, 15.4.1.2.1.

[51] Accepted revisions to Services Tariff Sections 2.15, 15.4.1.2.2.

The NYISO requires conventional standalone resources providing Operating reserves and Regulation Service to achieve the stringent reliability requirements. It is paramount to system reliability that those same standards be applied to Aggregations, and that the NYISO not simply assume, based on the declaration of an Aggregator, that an Aggregation is capable of a service that its individual DER may not be qualified to provide when evaluated on a stand-alone basis. This remains true until the NYISO can develop a market design with stakeholder input that will maintain reliability and provide increased flexibility to Aggregators and other Market Participants. Until that time the NYISO believes it is appropriate to apply the same standards as are applied to conventional Generators to support the essential role of maintaining system reliability.

The NYISO is currently working with its stakeholders to develop an integrated Hybrid Storage model. Part of this effort will explore the feasibility and technical requirements necessary to allow an integrated Hybrid Storage Resource to provide Operating Reserves based on the energy capabilities of each of the individual components of the Hybrid Storage Resource. The NYISO's participation model for integrated Hybrid Storage Resources will be similar to the DER Aggregation participation model, in that a combination of ESRs and other Resources will be combined to form a single Hybrid Storage Resource that participates in the NYISO's markets. Provided that the NYISO and its stakeholders develop a market design that affords integrated Hybrid Storage Resources a way to provide Operating Reserves while maintaining compliance with applicable reliability requirements, the NYISO will then determine if it can integrate those same market design concepts into the DER and Aggregation model as improvements. The NYISO expects to complete its market design for integrated Hybrid Storage Resources in 2022.

Types of Technologies

To implement section 35.28(g)(12)(ii)(a) of the Commission's regulations, the Commission required in Order No. 2222 that each RTO's/ISO's rules not prohibit any particular type of distributed energy resource technology from participating in distributed energy resource aggregations.

Commission Question 1

NYISO states that individual Resources that participate in the NYISO-administered markets through the following Resource types will not be eligible to participate in an Aggregation: Generators with PURPA contracts, Limited Control Run-of-River Resources, Behind-the-Meter Net Generation Resources, Municipally-owned Generation, System Resources, and Control Area System Resources. NYISO explains that these participation models were developed over time to recognize specific traits, which the DER and Aggregation participation model is not designed to accommodate.

(a) *Please explain why the DER and Aggregation participation model cannot be revised to accommodate the specific traits of these Resource types.*

NYISO Response

The NYISO has specific, narrowly-tailored, market participation models that address or incorporate preexisting regulatory rights, longstanding Tariff authority, technical capability, operating characteristics, and specific operating configurations. These participation models are not compatible with the NYISO's DER and Aggregation participation model for reasons that are explained below. Therefore, the Tariff revisions the Commission accepted in its 2020 DER Order prevent Generators with "legacy" Public Utility Regulatory Policies Act ("PURPA") contracts, Limited Control Run-of-River Hydro Resources, Behind-the-Meter Net Generation Resources, Municipally-owned Generation, System Resources and Control Area System Resources from participating in an Aggregation.[52] The prohibitions address inconsistencies between the identified *participation models* and the rules that apply to DER and Aggregations; the prohibitions do not prohibit participation by NYCA *Resources*.

The NYISO addresses each of the participation models below.

Generators with PURPA Contracts: The Services Tariff includes special settlement rules for Generators providing service under "legacy" PURPA contracts that are inconsistent with the settlement rules and ICAP Supplier qualification requirements that apply to most Generators. There are very few Generators that are still operating under legacy PURPA contracts in the NYISO, and the NYISO would not be capable of incorporating special/unique PURPA settlement obligations into its implementation of DER and Aggregations without undertaking *significant* additional effort that would provide little or no value.[53]

Unique Settlement Rules for PURPA Generators

Services Tariff Section 4.5 states that Generators providing Energy under PURPA contracts are paid for each MW of Energy injected, irrespective of the Generator's NYISO-directed dispatch.[54] This rule is an exception from the generally applicable rule that Real-Time Market Settlements for injections are paid based upon their NYISO-directed dispatch (subject to a tolerance for over-generation).

[52] *See* accepted Services Tariff Section 4.1.10.

[53] The NYISO believes it is unlikely that a Generator with a legacy PURPA contract would ask to participate in an Aggregation before the contract expires.

[54] Services Tariff Sec. 4.5(i).

Generators with PURPA contracts are also not subject to the NYISO's rule that a Supplier that is not providing Regulation Service, and persistently operates at a level below its Energy schedule, shall pay a persistent undergeneration charge to the ISO.[55]

Finally, Services Tariff Section 5.12.1.11.1 excepts Generators with PURPA contracts from the generally applicable requirement that Installed Capacity Suppliers located East of Central-East to Bid their Capacity available for supplying 10-Minute Non-Synchronized Reserve.

Each of the above three accommodations for Generators with legacy PURPA contracts were developed to comply with the legal/regulatory requirement that the Supplier (often the local Transmission Owner) offering Generators operating under PURPA contracts are required by law to take and pay for the PURPA unit's actual output.[56] Since the NYISO already has a participation model that it developed to accommodate Generators that operate pursuant to legacy PURPA contracts, it would not make sense for the NYISO to develop a duplicative DER model to accommodate these same resources.

If an existing Generator with a legacy PURPA contract decides to surrender its PURPA status, it will lose the special settlement and capacity market participation rights that are described above but will become eligible to participate as a DER or in an Aggregation as an "ordinary" Generator with its operating characteristics[57] (provided that the Generator satisfies all other criteria for participation in an Aggregation).

Limited Control Run-of-River Hydro Resources:
Limited Control Run-of-River Hydro Resources ("ROR Hydro") are Generators where Energy production depends directly on river flows over which the ROR Hydro has limited control. Such dependence precludes accurate prediction of the facility's real-time output.[58] In many ways, ROR Hydro are similar to wind or solar IPR, which are permitted to participate as DER and in Aggregations, but there is an important difference in the NYISO's legacy implementation of ROR Hydro resources that prevented the NYISO from proposing to permit ROR Hydro to participate in heterogeneous DER Aggregations.

The NYISO has traditionally permitted small ROR Hydro facilities that are located in close electrical proximity to aggregate their capability and participate as a single ROR Hydro (a homogeneous aggregation). A number of the existing ROR Hydro Generators that participate in the NYISO's markets are, in reality, aggregations of several small ROR Hydro facilities. Because (1) the NYISO has traditionally permitted ROR Hydro

[55] Services Tariff Sec. 15.3A.2.

[56] *See, e.g.*, 18 C.F.R. § 292.303 (2021) ("Each electric utility shall purchase, in accordance with § 292.304, unless exempted by § 292.309 and § 292.310, any energy and capacity which is made available from a qualifying facility …").

[57] *See* 18 C.F.R. § 292.203 (2021) (general requirements for qualification).

[58] Services Tariff Sec. 2.12 (at definition of "Limited Control Run-of-River Hydro Resource").

to participate on an aggregated basis, (2) there are already ROR Hydro that participate in the NYISO's markets as components of an aggregated resource, and (3) the potential for new or additional ROR Hydro to be constructed and enter the market is low, there would be little value in re-designing the current market participation construct, which has been in place for many years. In sum, the NYISO already permits homogeneous aggregations of small ROR Hydro to participate in the NYISO's markets, so there is no need or reason to implement duplicative DER functionality.[59]

Under the DER rules the Commission accepted in its 2020 DER Order the NYISO *will permit* a hydroelectric resource to participate as a Generator in a (heterogeneous) DER Aggregation. A DER Aggregation that includes one or more hydroelectric Generators must comply with the same market rules that apply to all DER Aggregations.

Behind-the-Meter Net Generation Resources: The NYISO's Behind-the-Meter Net Generation Resource ("BTM:NG Resource") participation model allows a facility consisting of a Generator and a Host Load that located within a defined electrical boundary that operate as a single Resource. A BTM:NG Resource only offers its net capability (the capability in excess of its Host Load) in the NYISO's Energy, Ancillary Services, and ICAP markets. The comingling of Load and generation in a Resource's Energy, Ancillary Services, and ICAP market offers requires special rules to accurately account for its injection capability and Load (*e.g.*, utilization of net BTM:NG Resource data to establish load forecasts).

Including the BTM:NG Resource participation model market rules in the DER and Aggregation participation model would not be feasible. The NYISO's DER and Aggregation participation model is built on the assumption that any Load consumed by a DER is served by a Load Serving Entity ("LSE") and is not "wholesale" load. It would be administratively burdensome to the Aggregator and the NYISO to accommodate co-located generation and Load acting as a single BTM:NG Resource in an Aggregation.

Under the DER rules the Commission accepted in its 2020 DER Order the NYISO *will permit* the Generator to participate in a heterogeneous DER Aggregation. The facility would require metering such that the NYISO receives accurate telemetry and revenue-quality meter data for the Generator. If the load at the facility qualifies as a Demand Side Resource, it may also participate in a DER Aggregation.

Municipally-Owned Generation: If a municipal utility owns legacy generation that was in service or under construction as of December 31, 1999, and that generation has capacity in excess of the municipality's Unforced Capacity requirement, it may offer the

[59] The June 2019 filing proposed, and the Commission accepted in its 2020 DER Order, a prohibition on an Aggregation participating in another Aggregation. The NYISO is not able to implement "nested" Aggregations primarily because it would require unduly complex metering, telemetry, and settlement. Including a ROR Hydro that is, itself, an aggregation of small hydroelectric generators in a larger aggregation is outside the capabilities the NYISO is developing to implement DER. Accommodating "nested" Aggregations would add significant complexity to (and delay) the NYISO's implementation of its DER rules.

excess capacity from its municipally-owned generation in the NYISO-administered capacity market. Municipally-owned generation does not participate in the NYISO's Energy or Ancillary Service Markets. Instead, municipally-owned generation is operated by the municipality to self-supply its Load.

Most ICAP Suppliers (including an Aggregation) must, on a daily basis: (i) schedule a Bilateral Transaction, (ii) Bid Energy in each hour of the Day-Ahead Market in accordance with the applicable provisions of Services Tariff Section 5.12.1, and/or (iii) notify the NYISO of an outage.[60] The total amount Bid, scheduled in a Bilateral Transaction or declared as out of service must equal the ICAP Supplier's monthly ICAP obligation. Municipally-owned generation is exempt from this requirement due to the arrangement that was negotiated around the start-up of the NYISO markets and memorialized in the NYISO's Tariffs.[61] This arrangement is incompatible with the NYISO's requirement that an Aggregation must Bid, schedule a Bilateral Transaction, and/or notify the NYISO of a full or partial outage.

Less than 125 MW of municipally-owned generation capacity participated in the NYISO's markets in 2021. The Generators are all relatively old, and some have deactivated in recent years. Given the limited set of pre-existing, municipally-owned fossil generators that participates in this program, it would not make sense for NYISO to develop new or updated DER rules to address participation by municipally-owned generation.

System Resources: A System Resource is a "portfolio" of Unforced Capacity provided by Resources located in a single ISO-defined Locality, the remainder of the NYCA (*i.e.,* Rest of State), or any External Control Area, that is owned by or under the control of a single entity (which is not the operator of the Control Area where the Resources are located), and that is made available to the NYISO. In other words, a System Resource is an aggregation. System Resources are represented as a single ICAP Supplier for the capacity market.

The NYISO has excluded a System Resource from participating in an Aggregation because the Aggregation model does not support one Aggregation (or, in System Resource terms, "portfolio") participating within another Aggregation. This restriction is in place to support the NYISO's metering and telemetry requirements and enable accurate settlements. Allowing "nested" Aggregations would unnecessarily and unduly complicate the NYISO's implementation of DER. The 2020 DER Order accepted a market rule prohibiting an Aggregation from participating in another Aggregation.[62]

[60] Services Tariff Sec. 5.12.7.

[61] Services Tariff Sec. 5.12.11.2.

[62] Accepted Services Tariff Sec. 4.1.10 ("One Aggregation cannot participate in another Aggregation ….").

> In addition, to the extent a System Resource includes resources located in external Control Areas, such a System Resource is also prohibited from participating as a DER or in an Aggregation under the 2020 DER Order because it is not located in the NYCA.[63]
>
> **Control Area System Resources:** Control Area System Resources are a set of Resources owned or controlled by an entity within a Control Area that is also the operator of such Control Area. Entities supplying Unforced Capacity using Control Area System Resources do not designate particular Resources as the suppliers of the Unforced Capacity.
>
> Control Area System Resources are not permitted to participate in an Aggregation for two reasons. First, as described above for System Resources, the NYISO does not permit an Aggregation (or portfolio) to participate within another Aggregation. Second, under the market rules accepted by the 2020 DER Order, each individual facility within an Aggregation must be electrically located within the NYCA. Control Area System Resources cannot be electrically located within the NYCA because the NYISO (the NYCA operator) does not own or control Resources. Therefore, Control Area System Resources are incompatible with the NYISO's DER and Aggregation participation model.

Importantly, a Resource that qualifies to use one of the tailored market participation models described above is not obligated to do so. A NYCA Resource that otherwise qualifies to be a DER can choose not to utilize one of the above participation models, and instead participate as a DER in an Aggregation. As the NYISO stated in its response to Issue 3 (Participation Model) Question 1(a), the DER and Aggregation participation model will not always be the best market participation option for all Resources located in the NYCA. The NYISO has developed other participation models over time to accommodate different Resource types based on their preexisting regulatory rights, longstanding Tariff authority, operation, configuration, and technical capabilities. The DER and Aggregation model supplements those existing, Commission-accepted models, it is not required to supplant them.

Double Counting of Services

To implement section 35.28(g)(12)(ii)(a) of the Commission's regulations, the Commission in Order No. 2222 allowed RTOs/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.

Commission Question 1

In its answer, NYISO requests that the Commission instruct it to (a) remove the references to "substantially similar" services from proposed section 4.1.10.6 of its Services Tariff, and (b) amend its proposed Aggregator attestation requirement in section 4.1.10.5 of the

[63] *Id*. ("Suppliers may aggregate individual Resources electrically located in the NYCA….").

Services Tariff to require that an Aggregator also attest that the individual Distributed Energy Resources participating in a given aggregation are not providing through a retail market or program "the same service" that the aggregation will be providing in the NYISO-administered markets.

(a) What role, if any, will the Distribution Utility play in helping NYISO verify that an Aggregator is not providing the same or substantially similar service in the NYISO-administered markets?

NYISO Response

The NYISO and Distribution Utilities will work cooperatively to identify retail market services and programs that are the same as the services DER are eligible to provide in the wholesale markets (*i.e.*, Energy, Operating Reserves, Regulation Service, Installed Capacity) through an Aggregation. The NYISO and Distribution Utilities are endeavoring to develop a matrix that will specifically identify retail markets and programs administered by the Distribution Utilities, and the corresponding wholesale market service (if any). The NYISO intends to post this matrix on its public website once finalized and will update the document from time to time when notified by a Distribution Utility of a new retail market service and/or program, or when an existing (wholesale or retail) market service or program has changed. As described in the July 2021 Filing, the NYISO will rely on an Aggregator's attestation that the DER it enrolls in the NYISO's wholesale markets are not providing the same service in a retail market and/or program.[64] The service matrix developed by the NYISO and Distribution Utilities will assist Aggregators in identifying incompatible services and programs.

Issue 4 – Locational Requirements

In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(b) to the Commission's regulations to require each RTO/ISO to revise its tariff to establish locational requirements for distributed energy resources to participate in a distributed energy resource aggregation that are as geographically broad as technically feasible.

Commission Question 1

NYISO states that Services Tariff, section 2.20 requires each individual facility within an Aggregation to be electrically located in the NYCA, and electrically connected to the same NYISO-identified Transmission Node. NYISO further states that it 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. NYISO states that its Transmission Node identification procedures will provide for the electrical footprint of each

[64] The NYISO and applicable Distribution Utility may audit the attestations made by Aggregators to confirm compliance with the rules prohibiting a DER from providing the same service in the wholesale markets and in retail markets and/or programs.

Transmission Node to be as large as possible while accounting for the efficiency of the NYISO-administered markets and the reliability of the system.

(a) Please describe the status of this ongoing process to identify Transmission Nodes and any updates regarding details of the proposed approach. For example, what criteria is NYISO planning to use to identify Transmission Nodes? How will NYISO ensure that the Transmission Nodes that it identifies provide locational requirements for Aggregations that are as geographically broad as technically feasible?

NYISO Response

The NYISO has been working with the applicable Member Systems[65] individually to identify Transmission Nodes in advance of implementing the DER and Aggregation participation model. At this time, the total number of Transmission Nodes identified in the NYCA is 115.[66] The NYISO does not expect the final number of Transmission Nodes to change significantly prior to implementing the participation model.

Load Zone	Transmission Nodes
A	17
B	9
C	19
D	3
E	18
F	22
G	5
H	2
I	3
J	10
K	7

Figure 1: Transmission Nodes by Load Zone

The NYISO and Member Systems have considered a number of factors to establish Transmission Nodes, including: (i) transmission and/or distribution system load pockets; (ii) thermal limits of local transmission and distribution lines and protective equipment; (iii)

[65] The Member Systems are Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, The Power Authority of the State of New York, and Long Island Lighting Company d/b/a Long Island Power Authority. The Power Authority of the State of New York does not operate a distribution system, and therefore there are no Transmission Nodes to identify.

[66] The NYISO models more than 700 load nodes in the NYCA. The 115 Transmission Nodes identified thus far are a subset of all of the NYCA load nodes.

Distribution Utility and Member System footprints; (iv) concentration of load relative to total average system load; and (v) distribution system substation topology.[67] Utilizing these and other factors,[68] the NYISO and Member Systems identified the Transmission Nodes that send efficient market signals to developers without compromising distribution system reliability. In areas of the NYCA that are heavily networked with adequate hosting capacity, Transmission Nodes are geographically and electrically broad. Areas of the NYCA that are more constrained require Transmission Nodes to cover smaller geographic and electrical footprints that better align with expected transmission constraints.

Commission Question 2

NYISO states that, once identified, it will post each Transmission Node on its public website alongside the list of Generator Names, Load Names, and other general system information.

(a) Other than posting the Transmission Nodes on the public website after they have been identified, will NYISO provide stakeholders with any other information, prior or subsequent to this posting, to make its Transmission Node identification process more transparent?

NYISO Response

As described in the June 2019 and July 2021 Filings, the NYISO will post the list of Transmission Nodes on its public website. At this time, the NYISO also intends to add the list of Transmission Nodes as an attachment to a business practice manual (such as the forthcoming aggregation manual). The NYISO may also publish a Technical Bulletin in advance of the completion of the business practice manual, if necessary, to provide Aggregators sufficient time to begin developing their Aggregations prior to implementation of the DER and Aggregation participation model in the NYISO's markets.

Pursuant to the rules accepted by the Commission in the 2020 DER Order, the NYISO will develop an initial set of Transmission Nodes prior to implementing its DER and Aggregation participation model and will review and update (if needed) the identified

[67] Though the NYISO and Member Systems have worked cooperatively to identify the set of Transmission Nodes, the NYISO has relied heavily on the Member Systems' engineering expertise managing the constraints on their systems.

[68] The various Member Systems have identified a number of additional criteria that they have evaluated throughout the Transmission Node determination process. These criteria often depend on the conditions of specific distribution systems and the networks within those systems. For example, the NYISO and applicable Member Systems have identified ten Transmission Nodes in Zone J and twenty-two in Zone F. The radial design of the distribution system and separate transmission paths through Zone F require more than twice the number of Transmission Nodes than in Zone J, despite significantly higher Load concentration in Zone J.

Transmission Nodes on an annual basis prior to the start of a Capability Year.[69] The set of Transmission Nodes will be effective for an entire Capability Year.[70]

The NYISO intends to discuss the set of Transmission Nodes with its stakeholders through its shared governance process prior to the implementation of the participation model, and when changes are made to the list of Transmission Nodes. The presentation will provide the NYISO with the opportunity to describe any changes to the set of Transmission Nodes and the reason(s) identified by the Member System requiring the change (*e.g.,* addition of a new substation, or operational issues necessitating a change) and provide a forum for stakeholders to ask questions and provide comments to NYISO staff.

Additionally, the NYISO's aggregation system is being designed such that affected Aggregators will be notified automatically via email when changes are made to the Transmission Node to which an Aggregation is modeled. The email will notify the Aggregator that it must re-enroll an Aggregation at the newly applicable Transmission Node. As noted in its response to Issue 4 Question 3(a), the NYISO will provide Aggregators with at least 60-days' notice of changes to the set of Transmission Nodes so it can modify its Aggregations as necessary.

Commission Question 3

NYISO states that, if it determines that 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); such changes will take effect on the first day of that Capability Year.

(a) Please provide additional support for whether this timeframe allows sufficient notice to Aggregators to make changes to Aggregations prior to the start of the Capability Year given the 90-day notice requirement to modify Aggregations.

NYISO Response

Pursuant to the rules accepted in the Commission's 2020 DER Order, the NYISO will post any changes to the set of Transmission Nodes at least ninety days prior to the start of a Capability Year.[71] Accounting for the thirty-day notice requirement to modify Aggregations[72] accepted by the 2020 DER Order, this provides Aggregators sixty days to evaluate and, if necessary, modify, Aggregations in response to Transmission Node changes.

Order No. 2222 requires each RTO and ISO to incorporate a process for timely review of incremental changes to a distributed energy resource aggregation already participating in the

[69] Accepted Services Tariff Sec. 4.1.10.2.

[70] *Id.* ("Changes to the set of Transmission Nodes shall take effect on the first day of the Capability Year.").

[71] June 2019 Filing at 26.

[72] *Id.* at 27.

wholesale markets,[73] which process should not exceed sixty days.[74] In the July 2021 Filing, the NYISO proposed to provide Distribution Utilities with the full sixty-day review period authorized by Order No. 2222.[75]

In Comments and Protests submitted in this docket, Advanced Energy Economy and the Sustainable FERC Project ("AEE/SFP") note that the timeline to update Transmission Nodes and modify Aggregations does not align with the NYISO's proposed Distribution Utility review period.[76] Under the NYISO's proposal, the sum of the Distribution Utility and NYISO review periods equal ninety days, which is the same as the notice of modified Transmission Nodes the NYISO proposed in its June 2019 Filing. The NYISO agrees with AEE/SFP that the addition of a sixty-day Distribution Utility review period upsets the NYISO's intended two-month period for an Aggregator to modify its Aggregation(s) in response to changes to Transmission Nodes.

The NYISO remains committed to providing Market Participants sixty days to evaluate the impact of Transmission Node changes on Aggregation composition. Therefore, if the Commission accepts the NYISO's proposed sixty-day Distribution Utility review period, the NYISO will propose a corresponding modification to Services Tariff Section 4.1.10.2 adjusting the posting date for Transmission Node change notifications to 150 days to address the concern raised by AEE/SFP.[77]

Issue 5 – Metering and Telemetry System Requirements

In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(f) to the Commission's regulations to require each RTO/ISO to revise its tariff to establish market rules that address metering and telemetry hardware and software requirements necessary for distributed energy resource aggregations to participate in RTO/ISO markets. The Commission stated that it would not prescribe the specific metering and telemetry requirements that each RTO/ISO must adopt; rather, the Commission provided the RTOs/ISOs with flexibility to establish the necessary metering and telemetry requirements for distributed energy resource aggregations, and required each RTO/ISO to explain in its compliance filing why such requirements are just and reasonable and do not pose an unnecessary and undue barrier to individual distributed energy resources joining a distributed energy resource aggregation.

The Commission stated that each RTO's/ISO's proposed metering requirements should rely on meter data obtained through compliance with distribution utility or local regulatory authority metering system requirements whenever possible for settlement and auditing purposes.

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[73] Order No. 2222 at P 292.

[74] *Id.* at P 295.

[75] July 2021 Filing at 44.

[76] *Comments and Protest of Advanced Energy Economy and the Sustainable FERC Project*, Docket No. ER21-2460-000 (Aug. 23, 2021) at 27.

[77] If the Commission directs the NYISO to modify its tariffs to provide utilities less than sixty days to evaluate incremental changes to DER and/or Aggregations, the NYISO will modify Services Tariff Section 4.1.10.2 accordingly.

To the extent that the RTO/ISO proposes that such information come from or flow through distribution utilities, the Commission required that RTOs/ISOs coordinate with distribution utilities and Relevant Electric Retail Regulatory Authorities (RERRAs) to establish protocols for sharing metering and telemetry data, and that such protocols minimize costs and other burdens and address concerns raised with respect to privacy and cybersecurity.

Commission Question 1

NYISO states that Aggregators will be required to provide the NYISO with multiple streams of telemetry and revenue quality meter data for DER Aggregations. NYISO explains that single resource type Aggregations will be subject to the existing metering and telemetry rules for that particular Resource type.

(a) Please explain whether NYISO will allow Aggregators to rely on meter data from the relevant Distribution Utility or RERRA.

NYISO Response

The primary providers of meter data for Resources located in the NYCA are the Member Systems. These entities provide metering services for existing Generators, as well as sub-zonal tie data and intertie import and export data. The June 2019 Filing proposed a new metering framework applicable to Demand Side Resources and DER Aggregations under which the Aggregator may obtain wholesale metering and/or meter data services from either: (i) the Member System for the Transmission District in which the entity is located, or (ii) a Meter Services Entity—a third party entity authorized to provide those services by the NYISO.[78] The NYISO recently modified these requirements to also permit Demand Side Resources to utilize municipal electric utilities for metering and meter data services.[79]

Pursuant to the NYISO's rules, the Member System or applicable municipal electric utility will be the default provider of metering and meter data services. An Aggregator must make an election to use a Meter Services Entity. The only type of RERRA that is authorized to provide metering and meter data services is a municipal electric utility.

(b) Please clarify whether there are circumstances under which metering and telemetry data will come from, or flow through, Distribution Utilities. If so, please indicate

[78] June 2019 Filing at 52-53; Services Tariff Section 13.3.1.1.

[79] New York Indep. Sys. Operator, Inc. September 13, 2021 Filing Proposing Tariff Revisions to Modify Metering Requirements Applicable to Demand Side Resources, Docket No. ER21-2883-000. *New York Indep. Sys. Operator, Inc.*, Docket No. ER21-2883-000 (Nov. 10, 2021) (unpublished letter order). The NYISO will make a corresponding revision in a future filing to enable Aggregators to utilize municipal electric utilities for metering and meter data services for DER Aggregations when the DER and Aggregation participation model is implemented.

whether NYISO coordinated with Distribution Utilities and RERRAs to establish protocols for sharing metering and telemetry data and describe any such protocols.

NYISO Response

The NYISO's Commission-accepted real-time telemetry data communication requirements for Aggregations complement existing requirements applicable to Generators. Aggregation telemetry data may be (i) communicated only with the applicable Member System (which Member System would pass through data to and from the NYISO), or (ii) communicated with both the Member System and the NYISO in parallel. The NYISO requires that telemetry data be provided to the applicable Member System to effectuate Interim New York Control Area Operation in the event of a NYISO contingency consistent with the NYISO's Emergency Operations Manual.[80] If the NYISO effectuates Interim New York Control Area Operations, each Member system will be responsible for securing and controlling their system. The rules applicable to real-time telemetry data communication for Aggregations were presented to, and discussed with, NYISO stakeholders at multiple meetings during the market design process that yielded the June 2019 Filing and the rules accepted by the Commission in the 2020 DER Order.[81]

Meter data used for settlement purposes will come from either the applicable Member System or the Meter Services Entity, as described in the NYISO's response to Issue 5 Question 1(a).

Commission Question 2

NYISO states that 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. In its answer, NYISO states that it has established flexible rules for small Distributed Energy Resources with a response of under 100 kW participating in an Aggregation. NYISO states that the option to utilize alternative measurement and verification tools (such as calculating six-second telemetry values derived from five-minute data in place of real-time measurement) avoids the need for small facilities to install more costly hardware and software that is required for conventional Resources.

(a) Please explain the circumstances under which NYISO will accept directly measured (as opposed to calculated) metering and telemetry data. For example, are certain

[80] *See* New York Indep. Sys. Operator, Inc., Emergency Operations Manual (Manual 15) § 8.11 (Jul. 2021), *available at*: https://www.nyiso.com/documents/20142/2923301/em_op_mnl.pdf/.

[81] *See, e.g., DER Energy & Capacity Market Design Presentation,* Business Issues Committee Meeting (Apr. 17, 2019) at slide 32, *available at:* https://www.nyiso.com/documents/20142/6006612/BIC%20DER%20Market%20Design%20Presentation.pdf.

individual facilities required to submit measured or calculated metering and telemetry data based on the size of the facility, the type of resource located at that facility, services provided by the Aggregation, or other factors? Please explain how any maximum size thresholds were selected.

NYISO Response

The NYISO's metering rules require Aggregators to collect directly metered data from each facility within an Aggregation for settlement purposes, regardless of resource size, type, or the services provided. Once collected, the revenue-quality meter data will be combined by the Aggregator to reflect Aggregation-level performance and be transmitted to the NYISO. The NYISO will permit Aggregators to use data obtained from retail billing meters (*e.g.*, hourly interval meters) so long as they are revenue-quality.

Each facility within an Aggregation will also be required, with limited exception, to provide directly measured real-time telemetry data on a six-second basis to the Aggregator, which will then be combined by the Aggregator to reflect the real-time operation of the Aggregation.

During its DER and Aggregation market design process, the NYISO and its stakeholders identified the provision of six-second telemetry from small facilities as a potential barrier to entry due to the costs of traditional telemetry solutions.[82] Therefore, in an effort to reduce that potential barrier, the NYISO proposed to permit Aggregators to seek authorization to utilize an alternative telemetry scheme for individual facilities that have a capability of 100 kW or less.[83] The NYISO identified the 100 kW or less threshold as a way for smaller resources to initially be included in the market, without creating unmanageable reliability risks due to lack of actual telemetry measurements that could impact situational awareness, grid security monitoring, and automatic generation control.[84]

Assets that utilize an alternative telemetry scheme must still be capable of providing directly measured telemetry with a periodicity of five minutes or less. This five-minute data will be used to augment the six-second data provided by the alternative scheme.

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[82] *See, e.g.*, New York Indep. Sys. Operator Inc., Docket No. ER19-2276-000, *Request for Leave to Answer and Answer* at 13-14 (Aug. 2, 2019).

[83] Jul 2019 Filing at 60.

[84] Six-second telemetry is necessary to meet mandatory bulk power system transmission operating reliability criteria, including criteria unique to New York State. Specifically, New York State Reliability Council Requirement D.1 for Mitigation of Major Emergencies requires that immediate corrective action must be taken to reduce the loading on a transmission facility to below its Short-Term Emergency rating within five minutes to make sure that the transmission lines are not damaged or compromised. New York State Reliability Council, LLC, Reliability Rules & Compliance Manual (Version 45) (Jul. 17, 2020) at 70, *available at*: https://www.nysrc.org/PDF/Reliability%20Rules%20Manuals/RRC%20Manual%20V45%20Final.pdf.

Issue 6 – Coordination between the RTO/ISO, Aggregator, and Distribution Utility

Role of Distribution Utilities

To implement § 35.28(g)(12)(ii)(g) of the Commission's regulations, Order No. 2222 required each RTO/ISO to develop a distribution utility review process that includes criteria by which distribution utilities would determine whether (1) each proposed distributed energy resource is capable of participation in a distributed energy resource aggregation; and (2) the participation of each proposed distributed energy resource in a distributed energy resource aggregation will not pose significant risks to the reliable and safe operation of the distribution system. The Commission also stated that the distribution utility should have the opportunity to request that the RTO/ISO place operational limitations on an aggregation or removal of a distributed energy resource from an aggregation based on specific significant reliability or safety concerns that it clearly demonstrates to the RTO/ISO and distributed energy resource aggregator on a case-by-case basis.

In Order No. 2222-A, the Commission clarified that, although it is providing each RTO/ISO with the flexibility to develop review procedures and criteria appropriate for its region, the Commission expects that the criteria proposed on compliance will require that an RTO/ISO decision to deny wholesale market access to a distributed energy resource for reliability reasons be supported by a showing that the distributed energy resource presents significant risks to the reliable and safe operation of the distribution system.

In Order No. 2222-A, the Commission required that the review criterion on impacts on distribution system reliability must include "any incremental impacts from a resource's participation in a distributed energy resource aggregation that were not previously considered by the distribution utility during the interconnection study process for that resource."

Commission Question 1

NYISO proposes Services Tariff, section 4.1.10.7.1 to authorize the applicable Distribution Utility to evaluate the reliability and safety impact of each Distributed Energy Resource connected to its electrical facilities. Proposed Services Tariff, section 4.1.10.7.1 states that NYISO "shall incorporate such finding(s) [sic] its review of the Distribution Energy Resource. The [NYISO], Distribution Utility, and Aggregator shall evaluate the reliability and/or safety concerns identified by the Distribution Utility, and attempt to implement appropriate measures to mitigate the reliability and/or safety concern(s)."

(a) Please provide the criteria by which Distribution Utilities would determine whether a Distributed Energy Resource is capable of participating in an Aggregation, including any specific metrics. Will the Aggregator attestation requirements proposed in NYISO's answer with respect to double counting be sufficient for Distribution

Utilities and NYISO to determine whether a Distributed Energy Resource is capable of participating in an Aggregation?

NYISO Response

The NYISO's proposed market rules provide the applicable Distribution Utility the opportunity to evaluate each DER seeking to participate in an Aggregation that will connect to its distribution facilities.[85] In its assessment, the applicable Distribution Utility will determine whether a DER is capable of participating in an Aggregation (and whether a DER's participation in an Aggregation should be limited) by evaluating whether the individual DER's design criteria, interconnection, and how operating characteristics affect the particular distribution system, and, when necessary, network. As described below, New York's Distribution Utilities will evaluate a number of factors to determine whether a DER is capable of participating in an Aggregation. This criteria may evolve over time as distribution interconnections and operation of the distribution system change. An Aggregator's attestation that the DER it enrolls are not providing the same service to the retail and wholesale markets is only one such factor.

Based upon our discussions with Distribution Utilities, the evaluation of a DER may include the following criteria:

- Whether the DER is providing service in one or more Distribution Utility programs;
- Whether the DER's participation in the wholesale markets will lead to duplicative compensation, or the double counting of services;
- Verification of Transmission Node mapping and the electrical location of the DER and Aggregation;
- Assessment of whether the facility's interconnection agreement permits wholesale market services;
- Whether the interconnection agreement limits the amount (*e.g.*, kW) or type (*e.g.*, Regulation Service) the DER may provide;
- Whether the interconnection agreement needs to be modified to accommodate the DER's participation in the wholesale markets; and
- Assessment of whether a transmission or distribution system Aggregation-level study is necessary to identify potential system impacts.

To effectuate the evaluation of these criteria, Distribution Utilities may review specific DER attributes and operating parameters and attributes of the local distribution system, such as:

- Generator emissions compliance documentation

[85] *See* Proposed Services Tariff Sec. 4.1.10.7.1.

- Ramp rates
- Upper and Lower Operating Limits
- Voltage and frequency ride-throughs
- Power factors
- Control modes
- Nameplate ratings
- Identification of the distribution system feeder and feeder segment
- Distribution line voltage class
- The specific circuit and bus to which the DER connects
- Any operational limitations identified for the circuit or feeder (*e.g.*, time-of-day restrictions) identified by the Distribution Utility
- Any operational limitations identified for the DER (*e.g.*, charge time for a storage device) identified by the DER Owner/Operator
- The real-time monitoring and telemetry infrastructure available on the applicable distribution system and circuit(s)
- DER metering and telemetry infrastructure
- Applicable Distribution Utility Tariff requirements
- The wholesale market services the DER proposes to provide.

(b) *Please explain what showing is required from the Distribution Utility to support the decision that the Resource presents significant risks to the reliable and safe operation of the distribution system. How will information about Distribution Utility review concerns be shared with Aggregators?*

NYISO Response

A Distribution Utility will have 60 days to determine whether a DER presents significant risk to the reliable and safe operation of the distribution system. The Distribution Utility must notify both the NYISO and the applicable Aggregator of its findings by the end of that 60 day period. The notification must be accompanied by an articulable justification for any adverse safety and/or reliability impacts (*e.g.*, operation of the DER could (i) lead to distribution system equipment damage, (ii) result in specific safety concerns for utility employees or customers, or (iii) lead to reverse flows on the distribution system) and all information and data necessary to support its decision. Once provided by the Distribution Utility, the information will be uploaded into the NYISO's aggregation system and will be viewable in that system by the Utility, Aggregator, and the NYISO. The Distribution Utility's explanation must also be accompanied by any measures it identified to mitigate or resolve the safety and reliability risk(s).

(c) Please explain what NYISO means by "appropriate measures to mitigate reliability and/or safety concerns." Please specify what measures might be considered appropriate for such purposes.

NYISO Response

In the event that the Distribution Utility identifies reliability and/or safety concerns associated with the proposed operation of one or more DER in an Aggregation, the NYISO will pursue the least restrictive action to resolve the concern(s) and enable wholesale market participation by the DER. The NYISO has not previously listed the specific actions it may take to resolve issues identified by the Distribution Utility in order to keep its options open to address Distribution Utility concerns. The July 2021 Filing proposed to give the NYISO the authority to limit the capacity and/or wholesale market services that a DER may provide in order to address the Distribution Utility's concerns. But the actions the NYISO may take are not limited to those actions.

The actions the NYISO may require an Aggregation and/or DER to take to remedy Distribution Utility concerns include, but may not be limited to:

- Limiting the capacity the DER can Bid into the wholesale markets to less than its nameplate capacity
- Limiting the time of day that the DER can Bid to inject Energy onto the Distribution System, or, for Withdrawal Eligible Resources, when it can Bid to withdraw Energy from the Distribution System
- Limiting the services the DER can provide in the wholesale markets (*i.e.*, Energy, Operating Reserves, Regulation Service, and Installed Capacity)

The NYISO aims to work collaboratively with the Aggregator to resolve the safety and reliability concerns raised by the applicable Distribution Utility. Ultimately, the NYISO will not approve a DER for participation in the wholesale markets until all reliability and/or safety concerns raised by the Distribution Utility are addressed. As described in response to Issue 6 Question 1(c), the NYISO will communicate with the Aggregator and Distribution Utility to evaluate the utility's concerns and the Aggregator will be expected to develop appropriate, case-specific, remedies to address those concerns. The NYISO believes that developing an exclusive list of actions it may take to address Distribution Utility safety and reliability concerns at this time would unnecessarily limit the ability of Aggregators, Distribution Utilities, and the NYISO to craft fact-specific remedies that satisfy the Distribution Utility's needs that are cost-effective for the Aggregator and DER.

(d) Please explain how NYISO's proposed Distribution Utility review process addresses incremental distribution system reliability impacts. Please specify the tariff provision or provisions where Distribution Utility review of these incremental impacts on Distribution Utility reliability is discussed.

NYISO Response

The July 2021 Filing proposed new Services Tariff Section 4.1.10.7 which would permit a Distribution Utility 60 days to evaluate the safety and reliability impacts of incremental changes to a DER and Aggregation.[86] If the incremental change to an Aggregation poses a threat to safety and/or reliability it must be communicated to the NYISO and the Aggregator within the review period. The process to share the identified safety and/or reliability concern(s), and to resolve such concern(s), will be the same as described in the NYISO's response to Issue 6 Question 1(b).

Commission Question 2

In Order No. 2222, the Commission required each RTO/ISO to revise its tariff to incorporate dispute resolution provisions as part of its proposed distribution utility review process. The Commission stated that each RTO/ISO should describe how existing dispute resolution procedures are sufficient or, alternatively, propose amendments to its procedures or new dispute resolution procedures specific to this subject.

In Order No. 2222-A, the Commission stated that disputes regarding the distribution utility review process—including those between non-host distribution utilities and a host distribution utility or the RTO/ISO—may be resolved through the RTO's/ISO's dispute resolution process, the Commission's Dispute Resolution Service, or complaints filed pursuant to section 206 of the Federal Power Act at any time.

NYISO's proposed Services Tariff, section 4.1.10.7.1 states that "[t]he ISO, Distribution Utility, and Aggregator shall evaluate the reliability and/or safety concerns identified by the Distribution Utility and attempt to implement appropriate measures to mitigate the reliability and/or safety concern(s)."

(a) Please explain how proposed Services Tariff, section 4.1.10.7.1 incorporates dispute resolution provisions as part of its proposed Distribution Utility review process. Does NYISO intend for this tariff provision to satisfy the Commission's requirement in Order No. 2222 to include dispute resolution procedures?

NYISO Response

The NYISO did not include tariff modifications proposing new dispute resolution procedures in the July 2021 Filing. Proposed Services Tariff Section 4.1.10.7.1 is not intended to satisfy the Commission's requirement to include dispute resolution procedures.

[86] Proposed Services Tariff Section 4.1.10.7.1. "A Distribution Utility shall have sixty (60) calendar days to review the reliability and safety impact of … any incremental change to an Aggregation."

Pursuant to Order No. 2222, Distribution Utilities are not required or permitted to authorize participation of a DER in the RTO/ISO markets.[87] This means that the NYISO will be the party responsible for authorizing DER participation in its markets. As described in the July 2021 Filing, the NYISO's Tariffs already includes generally applicable dispute resolution procedures set forth in Services Tariff Section 11. These Commission-accepted dispute resolution procedures will be available to Aggregators and Distribution Utilities, when the dispute arises "under the [Services Tariff] or the [OATT], ISO Procedures, or any Agreement entered into under either Tariff."[88] The NYISO's decision on whether a DER is permitted to participate in its markets, and any conditions or limitations placed on that participation, is a decision made pursuant to the Services Tariff. If an Aggregator or a Distribution Utility disagrees the NYISO's action with regard to authorizing a DER or an Aggregation, it may seek to resolve that issue through the dispute resolution procedures. Those procedures offer multiple avenues to address the dispute, including informal dispute resolution, non-binding mediation, or arbitration. Importantly, nothing in the NYISO's dispute resolution procedures restricts the rights of a party from filing a complaint or seeking other remedy from the Commission under the Federal Power Act.[89]

(b) What other avenues, if any, are available to Aggregators or Distribution Utilities to resolve disputes? For example, what avenues are available to Aggregators to dispute a Distribution Utility's determination regarding whether a proposed Distributed Energy Resource is capable of participation in an Aggregation and will not pose significant risks to the reliable and safe operation of the distribution system?

NYISO Response

The NYISO's response to Issue 6 (Role of Distribution Utilities) Question 2(a) describes the dispute resolution processes available to Aggregators or Distribution Utilities through the NYISO's Tariffs. In addition to the NYISO's procedures, Aggregators and Distribution Utilities may utilize dispute resolution procedures set forth in the interconnection agreement and/or Article VI of the New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators and Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems ("New York SIR").

The New York SIR sets forth the framework and procedures pertaining to interconnection of distributed generation and energy storage systems with a nameplate rating of 5 MW or less aggregated on the customer side of the point of interconnection with the distribution system. The Distribution Utilities expect that much of their evaluation of DER during the enrollment process will be centered on the interconnection agreement and therefore any dispute arising out of the interconnection agreement (including the interpretation of the agreement and associated rights and obligation of the parties) would be subject to the dispute resolution procedures set forth in the New York SIR. Specifically, the New York SIR provides:

[87] Order No. 2222 at P 298.

[88] Services Tariff Sec. 11.

[89] Services Tariff Sec. 11.1.1.

> If a dispute arises under this Agreement, and if it cannot be resolved by the Parties within ten (10) business days after written notice of the dispute, the parties agree to submit the dispute to mediation by a mutually acceptable mediator, in a mutually convenient location in New York State, in accordance with the then current International Institute for Conflict Prevention & Resolution Procedure, or to mediation by a mediator provided by the New York Public Service Commission. The Parties agree to participate in good faith in the mediation for a period of up to 90 days. If the Parties are not successful in resolving their disputes through mediation, then the parties may refer the dispute for resolution to the New York Public Service Commission, which shall maintain continuing jurisdiction over this Agreement.[90]

If a Distribution Utility and/or Aggregator (or developer) are unable to resolve their dispute through the New York SIR process, the parties may also bring their dispute to the New York Public Service Commission. These processes complement the dispute resolution processes available under the NYISO's Services Tariff.

Ongoing Operational Coordination

To implement section 35.28(g)(12)(ii)(g) of the Commission's regulations, in Order No. 2222, the Commission required each RTO/ISO to revise its tariff to (1) establish a process for ongoing coordination, including operational coordination, that addresses data flows and communication among itself, the distributed energy resource aggregator, and the distribution utility; and (2) require the distributed energy resource aggregator to report to the RTO/ISO any changes to its offered quantity and related distribution factors that result from distribution line faults or outages. In addition, the Commission required each RTO/ISO to revise its tariff to include coordination protocols and processes for the operating day that allow distribution utilities to override RTO/ISO dispatch of a distributed energy resource aggregation in circumstances where such override is needed to maintain the reliable and safe operation of the distribution system.

Commission Question 1

NYISO's proposed Services Tariff, section 4.1.10.7.2 states that "[t]he ISO, Transmission Owner, Distribution Utility, and Aggregator shall coordinate scheduling and

[90] *See* New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators and Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems, Appendix A – New York State Standardized Contract for Interconnection of New Distributed Generation Units and/or Energy Storage Systems with Capacity of 5 MW or Less Connected in Parallel with Utility Distribution Systems at Section 6.2 (Mar. 2021), *available at* https://www3.dps.ny.gov/W/PSCWeb.nsf/All/DCF68EFCA391AD6085257687006F396B?OpenDocument (link for "NYS Standardized Interconnection Requirements").

dispatch for all Generators, Demand Side Resources, and Distributed Energy Resources participating in the wholesale markets as part of an Aggregation in accordance with ISO Procedures."

(a) Please specify what information and data will be shared during operations. What data flows and communications will be used to share this information? Please cite the specific sections of the appropriate manuals or procedures, if applicable.

NYISO Response

The NYISO has worked with Distribution Utilities to develop the data and communication flows necessary to maintain the safe and reliable dispatch of Aggregations, which will be refined over time. The NYISO will be in continuous communication with Distribution Utilities about the status of Aggregations and individual DER.

The following information will be communicated among the Distribution Utility, the NYISO, and the Aggregator:

- Planned distribution system maintenance (prior to close of the Day-Ahead Market and in real-time)
- Planned transmission system maintenance (consistent with current procedures);
- Day-Ahead Market Bids from Aggregator to NYISO
- An Aggregation's Day-Ahead Operating Plan (*i.e.*, the individual DER dispatch the Aggregator intends to dispatch to meet is schedule) from Aggregator to Distribution Utility
- Distribution Utility review of individual DER schedules, and notification (if necessary) from the Distribution Utility to the Aggregator that a particular DER(s) should not be dispatched due to distribution system conditions
- Emerging distribution system conditions (actual or anticipated)
- Emerging transmission system conditions (actual or anticipated)
- Forced Generator/DER outages
- Real-Time Market Bids from Aggregator to NYISO
- Real-Time Dispatch instructions from NYISO to Aggregator
- Supplemental Resource Evaluation for distribution system reliability
- Supplemental Resource Evaluation for transmission system reliability
- Other factors as necessary.

The NYISO has discussed these coordination processes with Distribution Utilities, including the Joint Utilities of New York, representatives of municipal electric agencies, the

Long Island Power Authority, New York Power Authority, and representatives of electric cooperatives. The specific coordination procedures and practices are expected to be finalized in mid-2022. The current operational coordination timeline and processes described herein are expected to form the framework under which additional detail will be developed.

1. Administrative Coordination Processes

The following exchanges will take place among the NYISO, Distribution Utility, and Aggregator to inform the Aggregator's Bids and dispatch plan, and to facilitate wholesale market settlements:

Until 3:00 PM Two Days Before Dispatch: The Distribution Utility and/or Transmission Owner will notify the Aggregator (or, in some cases, the individual DER) of planned distribution and/or transmission system maintenance that may impact operations.[91] This information will allow the Aggregator to Bid in a manner consistent with distribution system conditions. Initially, it is expected that communication will take place via telephone or email. The NYISO and Distribution Utilities will explore whether this process can be automated in the future.

Up to 14 Days Prior and Until 5:00 AM on the Day Before Dispatch: Aggregator may submit and update Day-Ahead Market Bids through the NYISO's Market Information System.

By 11:00 AM on the Day Before Dispatch: NYISO will provide Aggregators and the associated Distribution Utility with each Aggregation's Day-Ahead Schedule. As it does today, the NYISO will also provide each Transmission Owner and Distribution Utility with its Day-Ahead Operating Plan. Upon receipt of the Day-Ahead Operating Plan, the Transmission Owner will communicate with the NYISO to re-dispatch Aggregations as necessary.

By 12:00 PM on the Day Before Dispatch: Aggregator must communicate the individual DER it intends to dispatch to meet its Day-Ahead Market Schedule to the Distribution Utility. The Distribution Utility will use this information to verify that the Aggregator's dispatch plan reflects the distribution system conditions previously communicated to the Aggregator. The Aggregator must include (i) the applicable Transmission Node, (ii) feeder used for each DER, (ii) unique identifier (*e.g.*, utility account number or meter number) for each DER being dispatched, (iii) minimum and maximum operating limits for each DER being dispatched, and (iv) the timing of the dispatch.

After 12:00 PM and No Later Than 10:00 PM on the Day Before Dispatch: Distribution Utility review of Aggregator's submitted dispatch plan. If the Aggregator's planned

[91] Distribution Utilities will be expected to communicate with Aggregators about *known* system conditions by 3:00 PM two days before the dispatch day. The NYISO understands that system conditions may change after that deadline, and this coordination timeline is not intended to limit Distribution Utility communication with Aggregators about changing system conditions that arise after the deadline. Distribution Utilities are expected to notify Aggregators of changed system conditions affecting a DER or Aggregation as soon as practicable.

dispatch is inconsistent with distribution system conditions, the Distribution Utility will advise the Aggregator as soon as practical.[92] If the Distribution Utility requires the Aggregator to modify its dispatch plan, the Aggregator may need to notify the NYISO of a derate and submit Real-Time Market Bids that account for the changed condition.

Day After Dispatch: The Aggregation's Meter Authority will send revenue meter data for each hour of the Dispatch Day to the NYISO.

2. Operating Protocols and Coordination

The following real-time communication protocols will help maintain distribution and transmission system situational awareness:

General Distribution Utility Communications: The Distribution Utility will report emerging distribution system issues (*e.g.*, feeder reconfigurations) to the individual DER or Aggregator as soon as practicable. These issues may include the need for individual DER derates or full outages. All operating information will be shared with the Distribution Utility control centers and Transmission Owner control centers.

Communication between the Distribution Utility and NYISO: Real-time communications regarding DER participation in the wholesale market will be communicated between the Distribution Utility's designated operating desk and the NYISO control room. The distribution Utility and NYISO will notify each other as necessary to initiate a Supplemental Resource Evaluation ("SRE") for reliability purposes that impact the dispatch of individual DER. If a DER and/or Aggregation is dispatched under the NYISO's SRE rules, the Aggregator will receive an updated schedule and dispatch instructions from the NYISO to reflect the SRE. If a curtailment of individual DER by the Distribution Utility becomes necessary to maintain distribution system security, the Distribution Utility will notify the NYISO by phone, or other agreed upon means.

Communication Between the Distribution Utility and Aggregator: The Distribution Utility will direct the DER and/or Aggregator to curtail or disconnect any individual DER that creates or exacerbates distribution system issues to preserve reliability and safety. All curtailments will be communicated to the Aggregator and NYISO as soon as practical. The Aggregator may then seek Distribution Utility authorization to operate separate DERs to meet its NYISO schedule. These communications are expected to be via telephone and/or email initially but may be automated in the future. Additionally, all metering and telemetry must be provided to the Distribution Utility consistent with the NYISO's requirements and the Aggregator must notify the Distribution Utility when the operating status of its DER changes (*e.g.*, that a unit is

[92] Distribution Utilities will be expected to communicate with Aggregators about *known* system conditions by 10:00 PM on the day before the dispatch day. The NYISO understands that system conditions may change after that deadline, and this coordination timeline is not intended to limit Distribution Utility communication with Aggregators about changing system conditions that arise after the deadline. Distribution Utilities are expected to notify Aggregators of changed system conditions affecting a DER or Aggregation as soon as practicable.

unavailable or can return to service). Finally, all Aggregators must be available for real-time operation verbal communication twenty-four hours a day, seven days a week, to maintain distribution system safety and reliability.

The NYISO will include these coordination protocols in its forthcoming Aggregation Manual, as well as in future updates (if necessary) to the Transmission & Dispatch Operations Manual, Day-Ahead Scheduling Manual, and Emergency Operations Manual. The Aggregation Manual is currently being developed by the NYISO, but is not completed, and has not been provided to stakeholders for review and comment. The NYISO intends to utilize its standard shared-governance process to receive feedback and obtain approval for the Aggregation Manual after finalizing its Order No. 2222 compliance tariff revisions, and its DER and Aggregation participation model. Waiting until the participation model is fully accepted by the Commission will allow the NYISO to present its stakeholders with a complete manual for review and approval.

(b) Please explain which NYISO tariff provision or provisions provide coordination protocols and processes for the operating day that allow Distribution Utilities to override RTO/ISO dispatch of an Aggregation in circumstances where such override is needed to maintain the reliable and safe operation of the distribution system.

NYISO Response

Proposed Services Tariff Section 4.1.10.7.2 describes the operational coordination process by which the NYISO, Distribution Utility, Transmission Owner, and Aggregator will communicate and collaborate to achieve efficient and reliable dispatch of Aggregations. In the event that a Distribution Utility determines that one or more DER or Aggregations must be curtailed to preserve distribution system safety and reliability, it must communicate such curtailment instructions to the NYISO and the Aggregator. Once the Distribution Utility communicates its concerns to the Aggregator and the NYISO, the Aggregator shall update its Day-Ahead and Real-Time Market Bids (if any) in a manner that resolves the Distribution Utility's concerns. The Aggregator must also notify the NYISO of all full or partial outages, unless the Aggregation can be redispatched to resolve the Distribution Utility's concern and achieve its NYISO issued schedule or dispatch.

(c) Please explain how these coordination protocols and processes will be transparent and when an Aggregation will be informed of Distribution Utility overrides and by whom.

NYISO Response

Proposed Services Tariff Section 4.1.10.7.2 requires a Distribution Utility to notify an Aggregator of any real-time condition requiring a DER derate or outage as soon as practicable. The Aggregator must then evaluate whether it must adjust its wholesale market Bids (if possible) or notify the NYISO of a derate or full outage of the Aggregation. The NYISO declined to set forth a specific timeline by which the Distribution Utility must act in its tariff. This

determination reflects the reality that distribution system and NYS Transmission System operation centers should have the flexibility to respond to system conditions in real-time.

As described in the NYISO's response to Issue 6 (Ongoing Operational Coordination) Question 1(a), Distribution Utilities will be in communication with Aggregators and the NYISO in advance of the close of the Day-Ahead and Real-Time Markets. These coordination processes are expected to uncover distribution system conditions requiring unit derates in advance of real-time operations and therefore provide Aggregators the opportunity to manage their Aggregation's Bids in a manner that addresses system conditions and meets business needs.

Role of Relevant Electric Retail Regulatory Authorities

To implement section 35.28(g)(12)(ii)(g) of the Commission's regulations, in Order No. 2222 the Commission required each RTO/ISO to specify in its tariff, as part of the market rules on coordination between the RTO/ISO, the distributed energy resource aggregator, and the distribution utility, how each RTO/ISO will accommodate and incorporate voluntary RERRA involvement in coordinating the participation of aggregated distributed energy resources in RTO/ISO markets.

Commission Question 1

NYISO states that it 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. In addition, NYISO proposes to provide each Distributed Energy Resource's RERRA with the physical and operational data collected for the Distributed Energy Resource upon the request.

(a) Please specify whether the RERRA will have a role in coordinating the participation of Aggregations in NYISO's markets by: developing interconnection agreements and rules; developing local rules to ensure distribution system safety and reliability, data sharing, and/or metering and telemetry requirements; overseeing Distribution Utility review of Distributed Energy Resource participation in Aggregations; establishing rules for multi-use applications; or resolving disputes between Aggregators and Distribution Utilities over issues such as access to individual Distributed Energy Resource data.

NYISO Response

A RERRA will have a role in coordinating DER participation in the NYISO's markets if it chooses to do so. Consistent with Order No. 2222,[93] the proposed revisions to the NYISO's tariff provide that such participation is optional.[94] With respect to the specific issues identified above:

[93] Order No. 2222 at P 322.

[94] Proposed Services Tariff Sec. 4.1.10.7.3.

1. The New York State Public Service Commission[95] has developed Standardized Interconnection Requirements and an application process applicable to new distributed generation with a capacity of 5 MW or less.[96] The Standard Interconnection Requirements supplement the existing interconnection requirements Distribution Utilities have historically utilized.
2. The New York State Public Service Commission also has rules related to the safety and reliability of the distribution system,[97] metering and telemetry,[98] data use,[99] and disputes between utilities and their customers.[100]
3. The NYISO is not aware of specific New York State Public Service Commission coordination with Distribution Utilities regarding the evaluation of the safety and reliability impacts of DER or DER modifications for wholesale market participation. The actual evaluation performed by a Distribution Utility will be informed by the rules and requirements established by the RERRA (*e.g.*, a New York SIR interconnection agreement) however.

[95] The New York State Public Service Commission has jurisdiction over independent retail utilities, municipal electric systems, and electric cooperatives. *See Electric Utilities Regulated by the PSC, available at*: https://www3.dps.ny.gov/W/PSCWeb.nsf/All/03627EFC626529EE85257687006F39CD?OpenDocument.

[96] *Standardized Interconnection Requirements and Application Process for New Distributed Generators and Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems*, New York State Public Service Commission (Mar. 2021), *available at*: https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/dcf68efca391ad6085257687006f396b/$FILE/85676075.docx/March%202021%20SIR%20-%20Final.docx.

[97] *See, e.g.*, 16 N.Y.C.R.R. Parts 125, 126. *See also*, Case No. 90-E-1119, Proceeding on Motion of the Commission to Consider Establishing Standards on Reliability and Quality of Electric Service, *Order Adopting Standards on Reliability and Quality of Electric Service* (Jul. 2, 1990). The New York State Public Service Commission's statutory authority to promulgate safety and reliability rules applicable to the distribution is provided in Sections 65 and 66 of the New York State Public Service Law.

[98] *See* 16 N.Y.C.R.R. Part 92.

[99] NYISO's tariffs include provisions for sharing meter and telemetry data, operating data, and facility data among the NYISO, Distribution Utility and Aggregator. *See* Proposed Services Tariff Secs. 4.1.10.6 (sharing data on retail services provided by a DER engaged in dual participation), 4.1.10.7.1 (sharing DER configuration and operating data for the purposes of evaluating distribution system safety and reliability), 4.1.10.7.2 (sharing data related to Day-Ahead and Real-Time Market operations). *See also*, Services Tariff Sec. 13 (metering and telemetry requirements).

[100] *Standardized Interconnection Requirements and Application Process for New Distributed Generators and Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems*, New York State Public Service Commission, at Appx. A, Sec. 6 (Mar. 2021), *available at*: https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/dcf68efca391ad6085257687006f396b/$FILE/85676075.docx/March%202021%20SIR%20-%20Final.docx.

Issue 7 – Modifications to List of Resources

In Order No. 2222, the Commission required 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).[101]

In Order No. 2222-A, the Commission encouraged the RTOs/ISOs to propose abbreviated distribution utility review processes for modifications to existing aggregations.[102] The Commission also limited the length of the distribution utility review period to no more than 60 days.[103]

Commission Question 1

NYISO states that if an individual facility wants to change Aggregations to a different Aggregation of the same Aggregation type, NYISO requires at least 90 calendar days prior notice, and that the change will become effective following NYISO authorization, at the start of a calendar month.

(a) Please support NYISO's proposed requirement that individual facilities must provide such notice rather than the Aggregator as the market participant.

NYISO Response

The 2020 DER Order accepted a market rule that "an individual Resource may leave its current Aggregation and/or join a new Aggregation to be effective at the start of a calendar month," and "must provide at least thirty (30) calendar days' notice of its intent to change Aggregations."[104] The 30-day notice is necessary to provide NYISO sufficient time to perform the administrative tasks necessary to move a DER from one Aggregation (and, where necessary, Aggregator) to another. The NYISO proposed to extend the 30-day requirement to 90 days in the July 2021 Filing in order to accommodate a 60-day period for Distribution Utility review.[105] It is not the NYISO's intention to require an individual Resource to provide the necessary notice. The NYISO expects that in most cases the Aggregator will provide the required notice. However, the NYISO's tariff does not foreclose the opportunity for an individual Resource to submit notification that it wants to leave its Aggregation or to change Aggregations. This flexibility allows an individual Resource to notify the NYISO of intent to leave or change

[101] Order No. 2222, 172 FERC ¶ 61,247 at P 336; *see id.* P 239 (clarifying that the distributed energy resource aggregator, not an individual distributed energy resource in the aggregation, is the single point of contact with the RTO/ISO, and the aggregator would be responsible for managing, dispatching, metering, and settling the individual distributed energy resources in its aggregation).

[102] Order No. 2222-A, 174 FERC ¶ 61,197 at P 71.

[103] *Id.* P 72.

[104] Accepted Services Tariff Section 4.1.10.3.

[105] July 2021 Filing at proposed revision to Services Tariff Sec. 4.1.10.3.

Aggregations if, for example, its Aggregator has refused to provide the required notice to the NYISO.

Commission Question 2

NYISO states that it proposes to increase the prior notice requirement for facilities seeking to change Aggregations from 30 to 90 days to accommodate the Distribution Utility review period required by Order No. 2222. NYISO states that it must complete a set of administrative tasks to ensure the NYISO's systems accurately reflect the switch when facilities change Aggregations. Proposed Services Tariff, section 4.1.10.7 states that a Distribution Utility shall have 60 calendar days to review each new Distributed Energy Resource connecting to its facilities that seeks to participate in the ISO markets, "and any incremental change to an Aggregation." NYISO also states that the Distribution Utility is not required to use the full 60-day review period, and that NYISO will work with utilities on a case-by-case basis to facilitate expedient review of Distributed Energy Resources. In its answer, NYISO states that it proposed a 60-day review period for incremental changes "after careful consideration and consultation with utilities." NYISO acknowledges that it "expects a portion of its [administrative] work can be completed simultaneous with the Distribution Utility's evaluation" but maintains that it "will still need time to complete its administrative work transitioning a DER between Aggregations after the utility completes its evaluation and the NYISO knows the change can be implemented."

(a) *Please provide additional support for NYISO's proposal to have the same 60-day Distribution Utility review period for modifications to existing Aggregations as for new Aggregations. Please explain whether NYISO, when consulting with the Distribution Utilities, considered if the removal of a small individual resource would be less likely to have distribution system impacts and should therefore not require as much time to review.*

NYISO Response

New York Distribution Utilities have advised the NYISO that they may need up to sixty days to evaluate modifications to existing Aggregations. It may be true that some modifications to existing Aggregations lessen the likelihood of adverse impacts to the distribution system (particularly if each DER modification is evaluated in isolation), but Distribution Utilities have been clear that all changes must be reviewed and that the maximum amount time to review those changes should not be less than sixty days.

The NYISO has considered the impact of small changes to an Aggregation, such as the removal of a small individual DER, and whether those changes would require a shorter timeline for review. The NYISO believes that minor modifications to an Aggregation or DER would require less (sometimes far less) than sixty days to review. However, a *de minimis* threshold to exempt small changes from Distribution Utility review, and from the sixty-day review timeline, is inappropriate in New York. A uniformly applicable *de minimis* threshold would be difficult to implement across the NYCA because conditions on the distribution systems vary and conditions can vary even within a distribution system from network to network, making it virtually

impossible for the NYISO to identify a universally appropriate threshold. The NYISO believes that Distribution Utilities should evaluate modifications to DER and Aggregations expeditiously but recognizes that the particular facts and circumstances of a DER or Aggregation modification may require up to sixty days to evaluate.

(b) Please explain in more detail how NYISO plans to work with Distribution Utilities on a case-by-case basis to facilitate expedient review of Distributed Energy Resources.

NYISO Response

The Distribution Utility will be responsible for completing its evaluation within the 60-day period allowed pursuant to proposed Services Tariff Sec. 4.1.10.7.1. The NYISO will support the Distribution Utility by answering questions, working with the Aggregator if additional information is required to evaluate a new or modified DER (or Aggregation), and providing other assistance as needed. The NYISO also may notify the Distribution Utility if it believes the new or modified DER (or Aggregation) should be subject to an abbreviated review process. For example, an Aggregator proposal to remove a 10 kW Demand Side Resource from an Aggregation may be an instance in which it is appropriate for the Distribution Utility to perform an expedited review. If the NYISO identifies this proposed modification as an instance where an abbreviated or expedited review is appropriate, it can advise the Distribution Utility to raise awareness about the particular facts and circumstances that it believes should result in an expedited evaluation. Even if the NYISO advises the Distribution Utility of the potential for expedited evaluation, the Distribution Utility's evaluation time is only capped by the tariff-defined 60-day clock.

Issue 8 – Effective Date

In Order No. 2222, the Commission required each RTO/ISO to propose a reasonable implementation date, together with adequate support explaining how the proposal is appropriately tailored for its region and implements Order No. 2222 in a timely manner.[106] The Commission stated that it will establish on compliance the effective date for each RTO's/ISO's compliance filing.

Commission Question 1

NYISO states that it will continue to develop software and hardware modification necessary to implement its DER and Aggregation participation model. NYISO currently anticipates that the modifications, testing, and deployment of its June 27 Filing will be ready in the fourth quarter of 2022.

(a) Please provide a timeline for NYISO's anticipated software modifications, testing, and deployment. Please provide as much detail as possible regarding important milestones and timetables.

[106] Order No. 2222, 172 FERC ¶ 61,247 at P 361.

NYISO Response

The NYISO continues to expect to implement its DER and Aggregation participation model in the fourth quarter of 2022. Implementing the participation model requires building new software applications, databases, and customer interfaces, and the modification of many of the NYISO's existing systems to accommodate DER.

The NYISO began developing the detailed requirements necessary to build the new software and modify existing software in 2020. That work has continued in 2021 and will be completed in 2022. The NYISO's current schedule will result in the software development being completed in September 2022 and testing of that software completed in October 2022:

1. **Software Development Milestones**

    a. December 2021 – Billing and Settlements System and Billing Simulator completed.

    b. March 2022 – Energy Management System and Market System (including certain operations tools and Aggregator registration) completed.

    c. May 2022 – Reference Level Software and all Finance applications completed.

    d. July 2022 – Bidding application completed, and partial completion of Corporate and MP Reports applications.

    e. September 2022 – Aggregation System completed, remainder of Corporate and MP Reports applications completed.

2. **Application Testing**

    a. March 2022 – Testing of completed software applications will commence and will continue throughout the second and third quarters of 2022.

    b. October 2022 – Testing of all software completed in October 2022.

The milestones presented in this response are based on the facts and circumstances understood by the NYISO today and may change. As stated in the June 2019 Filing and July 2021 Filing, the NYISO is unable to propose a precise effective date at this time. It is sometimes the case that issues are identified in testing that require additional software development or modification. Such discoveries may change the anticipated dates described above. Additionally, the timeline described above does not account for changes to the software and applications necessitated by the Commission's final Order in this Docket, or in response to new issues that may arise. Once the Commission issues an Order on the July 2021 Filing, the NYISO will work to identify software changes necessary to meet the Commission's directives which may delay the implementation schedule.

II. Service

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

III. Conclusion

WHEREFORE, the New York Independent System Operator, Inc. respectfully submits the additional information provided in Section I for the Commission's consideration.

Respectfully submitted,

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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 November 2021.

/s/ Joy A. Zimberlin

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