UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators	)))	Docket No. RM18-9-000

POST-TECHNICAL CONFERENCE COMMENTS OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

In accordance with the Commission's April 27, 2018, *Notice Inviting Post-Technical Conference Comments* in the above-captioned proceeding ("Notice"),[1] the New York Independent System Operator, Inc. ("NYISO") respectfully submits comments in response to certain questions raised in the Notice concerning the participation of distributed energy resource ("DER") aggregations in Independent System Operator ("ISO") and Regional Transmission Organization ("RTO") markets. The NYISO appreciates the opportunity to work with the Commission and Commission Staff through the technical conference and the submission of written comments.

The NYISO is in the middle of a multi-year process to integrate DERs into its wholesale energy, ancillary services, and installed capacity markets. The NYISO has been actively engaged since 2016 with its stakeholders, the New York utilities, and New York State entities and regulators to evaluate and address the complex operational and market design issues associated with integrating DERs in its wholesale markets. As a result of these discussions, the NYISO has worked with stakeholders to develop a DER market design proposal and is currently developing the detailed market and operational rules required to implement DER integration in New York, including rules for the participation of DER aggregations. Based on this experience,

[1] Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, Notice Inviting Post-Technical Conference Comments, Docket No. RM18-9-000 (April 27, 2018).

the NYISO submits for the Commission's consideration these comments to address certain questions in the Notice concerning locational requirements, coordination with distribution utilities, and dual participation.

The NYISO encourages the Commission to continue to provide ISOs/RTOs with flexibility to develop regional requirements to accommodate DERs, including DER aggregations, that appropriately reflects each region's unique market framework, system characteristics, and operational requirements. The many complications associated with DER integration are not amenable to one-size-fits-all rules. The effective integration of DERs in the wholesale markets will require each ISO/RTO's robust collaboration with its respective stakeholders to develop the complex operational and market rules and with the distribution utilities in its region to ensure that they have the processes and technology in place to support DER integration.

I. BACKGROUND

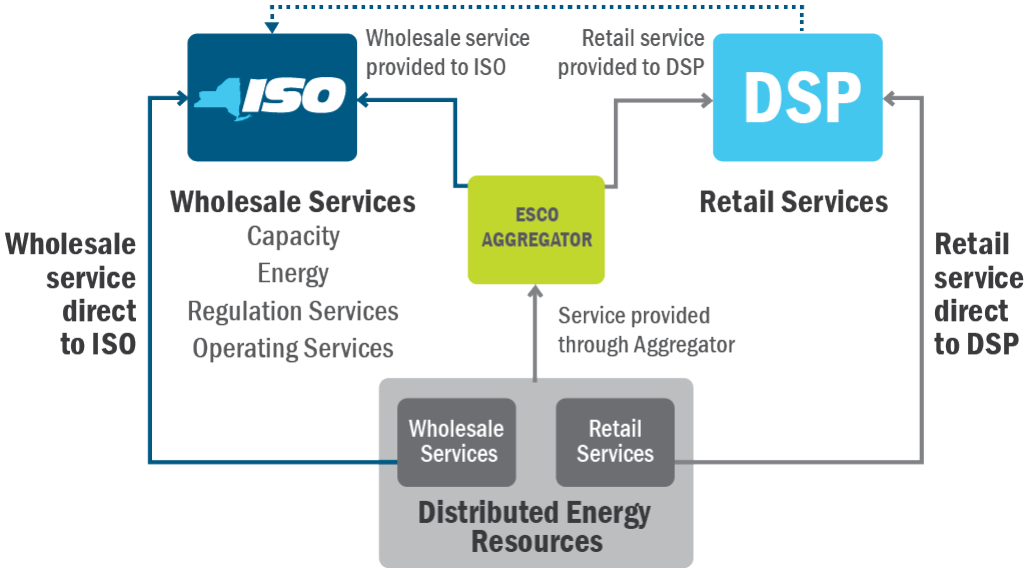
In 2016 the NYISO began a multi-year effort to more fully integrate the participation of DERs, including DER aggregations, into its wholesale energy, ancillary services, and installed capacity markets. The NYISO outlined its process for integrating DERs in its *Distributed Energy Resources Roadmap for New York's Wholesale Electricity Markets* ("DER Roadmap"), which it issued in February 2017.[2] Based on the DER Roadmap and discussions with its stakeholders, the NYISO subsequently developed its *Distributed Energy Resources Market Design Concept Proposal*, which it issued in December 2017 ("DER Market Design Proposal").[3] The DER Market Design Proposal establishes the framework for the NYISO's development of

[2] New York Indep. Sys. Operator, Inc., Distributed Energy Resources Roadmap for New York's Wholesale Electricity Markets (Feb. 2017) ("DER Roadmap"), *available at*: http://www.nyiso.com/public/webdocs/markets_operations/market_data/demand_response/DER_Roadmap/Distributed_Energy_Resources_Roadmap.pdf.

[3] New York Indep. Sys. Operator, Inc., Distributed Energy Resources Market Design Concept Proposal (Dec. 2017) ("DER Market Design Proposal"), *available at*: http://www.nyiso.com/public/webdocs/markets_operations/market_data/demand_response/DER_Roadmap/DER_Roadmap/Distributed-Energy-Resources-2017-Market-Design-Concept-Proposal.pdf.

rules for DER integration, including rules related to: (i) aggregations and modeling, (ii) measurement and verification and monitoring and control, (iii) performance obligations, and (iv) dual participation in wholesale and retail electricity markets. The NYISO is currently developing the market and operational rules required to address these complex issues. The NYISO anticipates completing this rule development by the end of 2018, with stakeholder review of and action on the rules in 2019, and implementation by 2021.[4]

The following figure from the DER Market Design Proposal depicts how the NYISO envisions DERs will provide services in the wholesale and retail markets in the future, with the dark blue line showing the scope of the NYISO's DER Roadmap initiative.[5]



The aggregation of DERs is a key element of the NYISO's proposed market rules for DERs' participation in the NYISO-administered markets. The use of aggregations increases the number of entities eligible to participate as DERs in the NYISO's markets while also providing a means by which the NYISO can effectively coordinate the dispatch and scheduling of DERs in a

[4] The NYISO anticipates developing business and software requirements in 2019, completing software development in 2020, and implementing the software in 2021 after robust a testing cycle to avoid any unintended market disruption.

[5] In the DER Market Design Proposal, the NYISO uses the terms "utility" and "Distributed Service Provider (or DSP)" interchangeably.

manner comparable to traditional wholesale market resources. The NYISO expects that most of the resources participating as dispatchable DERs will be less than 1 MW in capability, which would not meet the NYISO's current minimum offer threshold. However, the NYISO recognizes that allowing DERs less than 1 MW to participate in the wholesale market is beneficial to both resources and the wholesale markets. The NYISO, therefore, is proposing to reduce the minimum dispatchable DER offer size from 1 MW to 100 kW, and to permit a dispatchable DER with a capability less than 100 kW to meet the new minimum offer threshold by aggregating with other dispatchable DERs.

The NYISO believes that using third-party aggregators and/or distribution utilities to facilitate the participation of DERs is the most efficient way to incorporate DERs into the wholesale markets. The DER Coordination Entity ("DCE") will be the Market Participant with whom the NYISO interacts, with DER aggregations referred to as the DCE Aggregation ("DCEA"). This model relies on aggregators to coordinate the data collection, offers, scheduling, and metering of multiple DERs. Therefore, the NYISO is developing requirements for aggregators to ensure reliable system operation as well as efficient market integration.

II. COMMENTS

The NYISO provides these comments to address questions in the Notice concerning locational requirements, coordination with distribution utilities, and dual participation. The NYISO's comments reflect its experience in tackling these issues as part of the development of its DER Market Design Proposal and the related market and operational rules.

The NYISO encourages the Commission to continue to provide ISO/RTOs with the flexibility to develop individual, regional requirements to accommodate DERs, including DER aggregations, that appropriately reflects each region's unique market framework, system

characteristics, and operational requirements. As described above, the NYISO is currently in the middle of a multi-year process to develop market and operational rules for integrating DERs into its wholesale markets. The NYISO's experience in developing these rules has made clear the complexities associated with integrating DERs, which are not amenable to one-size-fits-all rules. Instead, the effective integration of DERs in the wholesale markets will require each ISO/RTO's robust collaboration with its respective stakeholders and state regulators to address the complex operational and market rules and the interplay between the wholesale and retail markets. In addition, each ISO/RTO will have to coordinate closely with the distribution utilities in its region, which currently possess a wide range of preparedness concerning the processes and technology needed to support DER integration.

A. Locational Requirements for DER Aggregations

The NYISO's DER Market Design Proposal provides for aggregating DERs at the transmission node level. Specifically, each DCEA will be represented at a transmission node by a single unique point identifier ("PTID"). This approach appropriately recognizes system characteristics, such as intra-zonal congestion and localized price formation, and encourages location-specific resource siting. The NYISO is working with the New York utilities to identify the set of transmission load nodes that balance DER aggregation participation and electrical system differences.[6] The utility and the DCE will be expected to identify the appropriate transmission node within the utility's service territory for each DER.[7] Once a DCEA is created, it will be modeled in the NYISO's systems using a single PTID, regardless of resource mix/size.

The DER Market Design Proposal does not contemplate multi-nodal aggregation for

[6] The NYISO and utilities will periodically review DERs' nodal assignments to ensure they accurately reflect underlying electric system conditions.

[7] It is possible, depending on the applicable distribution system conditions, that an individual DER may be required to be re-mapped to a different transmission node.

DER aggregations participating in the day-ahead and real-time energy and ancillary services markets due to the potential negative pricing and reliability consequences, particularly in the constrained areas around New York City, Long Island, and in certain locations of Western New York. In developing its DER Market Design Proposal, the NYISO identified a number of concerns with using a multi-nodal approach.

First, a multi-nodal approach creates difficulty in securing transmission constraints resulting from topology changes. For example, phase angle regulator ("PAR") tap changes can occur throughout the day. The New York State Transmission System has over 40 PARs, mostly in the New York City and Long Island areas, which taps change at least daily and, for some, more often than hourly. These tap changes alter the system topology and impact the effectiveness of resources spread across different nodes to secure a transmission constraint. In addition, an unexpected transmission outage could change the effectiveness of a multi-nodal aggregation's response to transmission constraints.

A multi-nodal approach would also require the NYISO to incur significant costs and resources for the oversight of the individual resources within the aggregation. Under the DER Market Design Proposal, an aggregation will be modeled and dispatched as a single resource. The DCE will communicate telemetry data for the aggregation, not for individual resources. As a result, resources as small as 1 kW can participate in the wholesale market without overburdening the NYISO's software systems or its operators, which would otherwise need to manage and have visibility concerning the individual resources. If, on the other hand, the NYISO were required to dispatch a single aggregation across multiple nodes, the NYISO would not have visibility concerning which resources (or number of MW) were being dispatched at each node by the DCEA, potentially exacerbating transmission constraints. In addition, if there

was a transmission or distribution outage within the footprint of a DCEA, the NYISO may not be able to dispatch the aggregation to address the issue because it would not have visibility concerning which individual resources are affected by the outage. These management and visibility issues could adversely impact the NYISO's ability to maintain system reliability and could create challenges to accurate price formation and transparency.

In addition, a distribution factor that is distinct for each DER aggregation and that is spread across multiple nodes could create a misalignment between prices and schedules for DERs. For example, a 2 MW DER aggregation that is split 60%/40% across nodes A/B, respectively, should be paid the locational based marginal price ("LBMP") that is 60% of the node A LBMP and 40% of the node B LBMP. One would expect that in response to a 1 MW dispatch request, the DER aggregation would similarly respond with 60% of its response being measured at node A and 40% at node B, which would be consistent with the grid need and corresponding *ex ante* prices. However, this DER aggregation may actually meet the 1 MW dispatch request by responding with 30% at node A and 70% at node B. In such case, the DER aggregation should have been paid an LBMP that consisted of 30% of the node A LBMP and 70% of the node B LBMP. That is, if the node A LBMP is $100/MWh and the node B LBMP is $30/MWh, then the LBMP the DER aggregation received would be $72/MWh based on an anticipated 60%/40% split, while its actual response of 30%/70% should have been valued at only $51/MWh.

Finally, as more distribution-connected resources are integrated into the grid, greater coordination between the ISOs/RTOs and distribution utilities will be required because dispatch requests from the ISO/RTO will impact both transmission constraints known to the ISO/RTO and also distribution circuit constraints that are not known to the ISO/RTO. With these added

complications, it is important to keep the wholesale aggregations rule simple to ensure that the necessary coordination protocols between the ISO and the distribution utilities do not become overly complicated and do not jeopardize local and/or regional electric system reliability.

Accordingly, the NYISO seeks to maintain a single node approach to simplify the requirements for DER participation in the NYISO's wholesale markets. The single node approach will enable the NYISO to provide more flexibility with its participation rules to enhance the participation of DER aggregations, including: (i) reducing the cost of participation by telemetering the performance of the aggregation, rather than each individual resource within the aggregation, and (ii) simplifying coordination protocols between the NYISO and the distribution utility to ease participation of resources in both wholesale and retail programs.

B. Coordination with Distribution Utilities

The DER Market Design Proposal provides for the NYISO to establish seamless coordination practices with the New York utilities and DER aggregators to facilitate the participation of DERs in the NYISO's wholesale markets. This coordination is required to ensure that DER participation in the wholesale markets does not compromise the reliability or safety of the transmission and distribution system.

The NYISO is developing registration processes to allow for accurate accounting of individual DERs on the system and to make all parties aware of their DER-related obligations and potential risks to the grid. These requirements will allow the NYISO to verify that all DERs that are part of an aggregation are capable of providing services to the NYISO and will enable the NYISO to accurately establish the correct transmission location for the aggregation. This coordination will also provide utilities with the opportunity to review all individual DERs, assess their impact on the distribution system, and inform the NYISO if an individual DER or an aggregation will present any reliability risk to the distribution system.

In addition, the NYISO is currently working with the New York utilities to develop procedures and protocols required to safely and reliably dispatch DERs[8] and will test those coordination practices through the NYISO's Pilot Program.[9] Ongoing, real-time coordination between the NYISO and utilities is necessary to ensure the safe and reliable operation of the transmission and distribution system.

Many of the protocols under consideration are built upon existing practices for coordinating traditional resources for local reliability. For example, like traditional supply resources, a DER aggregator will be required under the draft protocol to indicate any restriction in the aggregation's capability to provide services through its offer into the wholesale market. For events that are not known until after the offer has been presented to the NYISO, the utility will coordinate with both the NYISO and DER aggregator to facilitate the necessary dispatch instructions for the DER aggregation. This type of protocol ensures that all parties have situational awareness and that the reliability of both the distribution and transmission systems is maintained.

C. Dual Participation

The NYISO considers "dual participation" to be the simultaneous enrollment of an individual resource to provide services to the NYISO-administered wholesale markets and to another entity (*e.g.,* utility or host facility). Simultaneous participation has the potential to deliver greater benefits to both the resource and the bulk electric system by providing an opportunity for a resource to receive multiple revenue streams for providing multiple services to

[8] The draft protocols have been memorialized between the NYISO and utilities. http://jointutilitiesofny.org/wp-content/uploads/2018/03/DRAFT-Joint-Utilities-DSP-Communications-and-Coordination-Manual-2017-10-23.pdf

[9] The NYISO is working closely with the New York utilities on learning best practices for DER coordination as well as understanding potential dual participation use cases throughout the NYISO's Pilot Program. http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2017-09-29/NYISO%20DER%20Pilot%20Program%20Guide_FinalDraft.pdf

the grid.

In connection with its DER Market Design Proposal, the NYISO is currently evaluating how a DER's dual participation will be coordinated with the New York utilities. This evaluation includes discussions with the utilities on how to effectively coordinate energy market dispatch of DERs for both transmission system and distribution system needs.

One of the primary objectives for the NYISO in evaluating approaches for a DER's dual participation is maintaining its situational awareness and operational visibility of the DER so that it can correctly reflect the DER's output and availability in its security analysis and dispatch processes. The NYISO has identified two main areas of overlapping operational obligations that may result from a DER's participation in the NYISO-administered markets and in a retail program: (i) overlapping obligations due to reliability concerns, and (ii) overlapping obligations due to economic variables. Under the NYISO's DER proposal, dispatch signals for transmission and distribution reliability will continue to be prioritized over economic dispatch.

This dual participation concept proposal will also require the NYISO to distinguish NYISO-directed dispatch from dispatch instructions from other entities. Because DERs are individual actors, the potential exists for a DER to have obligations to other entities in addition to the DCE representing it in the wholesale market. Such competing obligations may arise due to a DER within an aggregation being enrolled in separate distribution level programs. It will be the DCE's obligation to comply with NYISO-issued dispatch directives and the NYISO tariffs. The DCE will be responsible for resolving any conflicts through its real-time energy offers, and if conflicts occur, it will be subject to settlement adjustments, penalties, and/or applicable availability calculations.[10]

The NYISO intends to require the DCE representing individual DERs, which are

[10] DCEAs will not be required to specify dual participation conflicts at a DER's registration.

participating in both the NYISO-administered markets and a retail program, to notify the NYISO of all non-wholesale dispatch so that NYISO operators are able to maintain situational awareness. Timely updates of the DCEA's offers may be necessary, and/or derates called in, to properly reflect any diminished flexibility of the resource in the wholesale markets due to competing obligations. Notification may also be necessary for tracking meter data for settlements and accounting. For each DCEA dispatch, the NYISO will need to consider: (i) reliability vs economic concerns, (ii) the impact on price setting, and (iii) the party financially responsible for compensating the DCEA for the services provided.

In developing its market design, the NYISO is also reviewing the issues raised in the Commission's Policy Statement on Utilization of Energy Storage for Multiple Services When Receiving Cost-Based Rate Recovery.[11] This includes the potential for combined revenue streams that may result in a resource receiving uncompetitive financial incentives akin to a "double payment" for providing the same service to the detriment of cost-based rate-payers.

Finally, the NYISO is monitoring the evolution of the New York State Public Service Commission's ("NYPSC's") "Value of Distributed Energy" ("VDER") proceedings, which will inform any framework that expands the dual participation rules for DERs.[12] The NYISO intends to evaluate applying the dual participation framework to the provision of ancillary services and possibly other market services not already compensated under any existing retail program.

[11] *See Utilization of Energy Storage for Multiple Services When Receiving Cost-Based Rate Recovery*, Policy Statement, 158 FERC ¶ 61,051 at P 13 (Jan. 19, 2017) ("the following issues, as raised in prior proceedings, should be addressed: (1) the potential for combined cost-based and market-based rate recovery to result in double recovery of costs by the electric storage resource owner or operator to the detriment of cost-based ratepayers; (2) the potential for cost recovery through cost-based rates to inappropriately suppress competitive prices in the wholesale electric markets to the detriment of other competitors who do not receive such cost-based rate recovery.")

[12] *See, e.g., Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters*, In the Matter of the Value of Distributed Energy Resources, *et al.*, NYPSC Case No. 15-E-0751, *et al.* (March 9, 2017).

III. COMMUNICATIONS AND CORRESPONDENCE

All communications and correspondence concerning these comments should be directed to:

Robert E. Fernandez, General Counsel
Karen Georgenson Gach, Deputy General Counsel
*Gregory J. Campbell, Attorney
Raymond Stalter, Director, Regulatory Affairs
New York Independent System Operator, Inc.
10 Krey Boulevard
Rensselaer, NY 12144
Tel: (518) 356-6000
Fax: (518) 356-4702
gcampbell@nyiso.com

*Designated to receive service.

*Ted J. Murphy
Hunton Andrews Kurth LLP
2200 Pennsylvania Avenue, NW
Washington, D.C. 20037
Tel: (202) 955-1500
Fax: (202) 778-2201
tmurphy@huntonAK.com

*Michael J. Messonnier Jr.
Hunton Andrews Kurth LLP
951 East Byrd Street
Richmond, VA 23219
Tel: (804) 788-8200
Fax: (804) 344-7999
mmessonnier@huntonAK.com

IV. CONCLUSION

The NYISO respectfully submits these post-technical conference comments for the Commission's consideration.

Respectfully submitted,

/s/ Michael J. Messonnier, Jr.
Michael J. Messonnier Jr.
Counsel to the
New York Independent System Operator, Inc.

June 26, 2018

cc: Anna Cochrane
James Danly
Jignasa Gadani
Jette Gebhart
Kurt Longo
David Morenoff
Daniel Nowak
Larry Parkinson
Douglas Roe
Kathleen Schnorf
Gary Will

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 26th day of June 2018.

By: */s/ John C. Cutting*

John C. Cutting
New York Independent System Operator, Inc.
10 Krey Blvd.
Rensselaer, NY 12144
(518) 356-7521