UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Electric Storage Participation in Markets	**)**	
Operated by Regional Transmission	**)**	**Docket Nos. RM16-23-000**
Organizations and Independent System	**)**	**AD16-20-000**
Operators	**)**	

COMMENTS OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

In accordance with the Notice of Proposed Rulemaking issued by the Federal Energy Regulatory Commission ("Commission" or "FERC") on November 17, 2016 in the above referenced proceeding (the "NOPR"),[1] the New York Independent System Operator, Inc. ("NYISO") hereby submits its comments in response to the NOPR.[2] The NYISO appreciates the opportunity to work with the Commission to develop appropriate market designs and rules for the wholesale markets it administers. FERC guidance will help Independent System Operators ("ISO") and Regional Transmission Organizations ("RTO") implement appropriate rules to integrate electric storage resources ("ESRs") and Distributed Energy Resources ("DER"). In developing a final rule aimed at enhancing the opportunities for such resources to offer services in wholesale electricity markets, FERC's final rule in this proceeding should include the flexibility necessary for each organized market to integrate ESRs and DER in a manner that

[1] *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Notice of Proposed Rulemaking, 81 Fed. Reg. 86522 (Nov. 30, 2016) [hereinafter *Notice of Proposed Rulemaking*].

[2] The NYISO notes that it is also a signatory to comments filed by the ISO/RTO Council in this proceeding.

builds upon existing Commission-approved market designs. Doing so will enhance the compatibility and comparability of the treatment of ESRs and DER with existing market rules associated with more traditional supply resources in each region, and will enhance each region's ability to timely and effectively integrate elements of a final rule into existing market designs.

The NYISO generally supports the proposals set forth in the NOPR, and is also supportive of the Commission's broader electric storage and DER policy objectives. To that end, the NYISO is actively undertaking multiple initiatives to integrate these resources into its markets, including (i) a participation model that will permit ESRs using a variety of technologies to offer Energy, Ancillary Services and Capacity in the NYISO's wholesale markets, and (ii) a number of initiatives to integrate DER. The NYISO also recently released its DER Roadmap, a comprehensive document explaining the NYISO's vision for integration of such resources, as well as a discussion of certain market design components and challenges.[3] The DER Roadmap reflects significant outreach with, and input from, NYISO stakeholders and the ESR and DER community. While the DER Roadmap is not a complete market design, it lays out the NYISO's thinking on how to enhance its existing market design to permit participation by a diverse array of behind-the-meter resources.

Integration of ESRs and DER will improve the Commission-regulated wholesale markets by providing system resiliency, energy security and fuel diversity, while at the same time having the potential to lower consumer prices and improve market efficiency. In these comments, the NYISO takes the opportunity to explain its existing market designs, the challenges of integrating ESRs and DER in these designs, the NYISO's ongoing efforts to integrate these resources in the

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

future, and seeks certain clarifications of the Commission's proposed rules. The NYISO looks forward to continuing its work with the Commission, developers, market participants, and other interested parties to develop rules that are appropriate for, and tailored to, the wholesale markets administered by the NYISO.

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II. COMMENTS

A. Elimination of Barriers to Electric Storage Resource Participation in Wholesale Electric Markets

The NOPR, intending to be technology neutral, defines ESRs as "resource[s] capable of receiving electric energy from the grid and storing it for later injection of electricity back to the grid regardless of where the resource is located on the electrical system."[4] The NOPR seeks to develop rules that will permit participation of all types of resources that are capable of electric storage, whether located on a transmission or distribution system. The NYISO believes this technology-neutral approach is well suited to a set of technologies that is undergoing fast-paced change and that is likely to continue rapid development moving forward.

[4] *Notice of Proposed Rulemaking* at 1 n.1.

The NYISO's existing market rules permit the participation of ESRs in the wholesale Energy, Ancillary Service, and Capacity markets through a variety of participation models (*e.g.*, Limited Energy Storage Resources,[5] Energy Limited Resources, and Special Case Resources). While this market design has proven successful in supporting participation of current supply technologies, the rules do not provide a comprehensive participation model that fully integrates ESRs into wholesale markets (*e.g.*, the NYISO's existing Energy market rules do not address an ESR's state of charge, but the existing rules for providing Regulation Service do permit state of charge management), which is the objective that lies at the heart of the NOPR. Market participants and other developers have approached the NYISO with potential projects hoping to provide services to its wholesale markets, and it is clear from these exchanges that these new technologies may have the capability to provide services to the wholesale market beyond what is currently contemplated in the NYISO's tariffs. Such services could allow ESRs and DER to provide additional value to grid operations and wholesale markets.

As a result of stakeholder consultations, and in coordination with NYISO grid operators and others, the NYISO has begun to develop a comprehensive model for ESR participation in the wholesale Energy, Ancillary Service, and Capacity markets. The market design is still in its initial stages, but the NYISO's vision is to harness the strengths of ESRs to supplement and support both existing thermal and hydroelectric resources as well as increasing penetration of renewable resources. These strengths include the capability to ramp up and down rapidly, to both inject energy onto and withdraw energy from the system, and to interconnect storage devices in locations that are advantageous to power grid needs and economic efficiency.

[5] Capitalized terms not otherwise defined herein have the meaning set forth in Section 1 of the NYISO's Open Access Transmission Tariff, and Section 2 of the NYISO's Market Administration and Control Area Services Tariff.

As part of this market design, the NYISO is identifying the physical and operational characteristics of ESRs that will shape their participation in the wholesale markets and their commitment and dispatch by NYISO operators. Regarding such characteristics, the NOPR proposes five requirements inherent to a participation model that appropriately values ESR qualities.[6] It states that ISO/RTO rule sets "should ensure that the RTO/ISO is able to dispatch the resource in a way that recognizes its physical constraints and optimizes its benefits to the RTO/ISO."[7] The NYISO supports these goals, but notes that wholesale market design, system topology and ESR projects vary by region. Accordingly, the rules promulgated by the Commission should account for such regional variation. The rules related to participation models should be sufficiently flexible to permit each region to maximize its development and integration of ESRs.

1. Electric Storage Resource Eligibility Requirements

Although ESRs can participate in the NYISO's Energy, Ancillary Services, and Capacity markets, the existing rules may not be fully accessible by new energy storage technologies. The existing rules were drafted in a manner to give grid operators confidence that existing storage resources were actually capable of providing the services they offered. The NY Battery and Energy Storage Consortium[8] and the NY Transmission Owners[9] comment that the existing rules prevent energy storage resources from fully participating in the wholesale markets and do not reflect the abilities of new energy storage technology. For example, rules to allow ESRs that can

[6] *Notice of Proposed Rulemaking* P 28.

[7] *Id*. P 29.

[8] *Id*.

[9] *Id*.

inject into the grid but are located behind a facility's meter do not currently exist. The NYISO recognizes these challenges and, as described above, is already working with our stakeholders on a comprehensive review and reform of the rules related to ESR participation in the NYISO-administered markets, while ensuring that the resource is capable of providing the services offered.

Recognizing the desire to enhance the existing organized market paradigm, the NOPR identifies three proposed rules related to eligibility requirements: (i) ISO/RTOs should establish eligibility rules permitting ESRs to participate to the extent technologically feasible in the Energy, Ancillary Service and Capacity markets, as well as provide non-market services such as blackstart, primary frequency response, and reactive power, (ii) permit ESRs to de-rate their capability, allowing them to meet minimum run-time standards to provide capacity and other services; and (iii) revise rules for ancillary services such as reserves as necessary to accommodate the technical capability of ESR.[10]

The NYISO is already addressing these three proposed rules through its market design process. As described above, the NYISO, in coordination with its stakeholders and other interested parties is developing a market design that will permit more comprehensive ESR participation in its Energy, Ancillary Services, and Capacity markets. In light of the complexity of these issues, the market design is scheduled to be completed by the end of 2018, after which the NYISO plans to develop appropriate tariff revisions and software to implement the market design by 2021. As a part of that design, the NYISO is reviewing existing participation standards, such as minimum output and run-time criteria that will need to be tailored to facilitate ESR participation.

[10] *Id.* PP 48-50.

With respect to the third proposed rule on ancillary services, the NYISO agrees that clarification is needed on whether ESRs can provide certain ancillary services (such as spinning reserves), and has worked with the Northeast Power Coordinating Council ("NPCC") to better understand the services ESRs are permitted to provide. For example, the NYISO sought clarification from the NPCC in 2016 on whether ESRs could be considered "synchronized" for the purposes of providing spinning reserves, and the NPCC recently determined that ESRs using inverter technology could provide spinning reserve service. Although this is a positive first step, the NYISO anticipates that future clarifications will be needed, and will work with the appropriate reliability organizations to permit ESRs to provide the services they are technically capable of providing. The Commission's final rule should also consider the potential market power implications of allowing resources to hold back energy through its offer, even if its intent is to allow release of that energy later in time.

The NOPR also seeks comment on whether eligibility to provide ancillary services should continue to be conditioned on a corresponding energy schedule.[11] Recognizing that each ISO/RTO co-optimizes energy and ancillary service dispatch and pricing, the NOPR states that it is not clear whether eliminating the need for an ESR to be online and synchronized to the grid would provide additional participation opportunities for an ESR considering the need for the resource to have an energy schedule.[12] The NYISO believes that de-coupling reserve and energy offers is inappropriate for the wholesale markets it administers. As described below, the NYISO spent a great deal of effort from 2002 to 2005 to develop the market rules and software that require energy offers with reserve offers to mitigate the market inefficiencies it was experiencing

[11] *Id.* P 51.

[12] *Id.*

before this requirement existed. Co-optimization is a fundamental tenet of the NYISO's market design.

When the NYISO was initially formed, it did not require all resources to submit energy offers with offers for ancillary services, and did not require resources to submit ancillary service offers with energy offers. During this time, the NYISO also did not utilize the energy offer when converting reserves to energy. Over time, this led to over-scheduling energy at times when reserve providers were converted to energy during some situations and short reserves in other situations, even though resources were physically available to provide those services. The market software over-scheduled energy because it was not able to efficiently select the most economic energy offers. Ultimately, this led to prices that did not efficiently align with operating conditions – prices would fall at precisely the time when the system needed additional injections. The NYISO was able to correct this inefficiency by requiring energy offers with offers to provide operating reserves. This change has, along with other market changes, led to greater efficiency in the market, improved price transparency, and has resulted in large reductions in uplift costs.

The NYISO currently operates its system in a "preventative mode" such that if a contingency occurs, our market model acts to price, schedule, and dispatch the system in a manner to maintain power system security. To perform this operation as efficiently as possible, the NYISO's commitment and dispatch software relies on the flexibility and efficiency of converting reserves to energy every five minutes, and dispatching resources based on the lowest costs to provide energy and reserves. The NYISO believes that a final rule that does not recognize regional differences related to co-optimization will potentially undermine established market rules and procedures in individual ISO/RTO markets such as the NYISO's, and creates

the potential for disparity in economic and operational treatment of offers for service from ESRs and DER than from other types of supply resources offering similar services. The NYISO does not, at this time, intend to change its co-optimization logic to accommodate ESRs to provide reserves offers without providing corresponding energy offers. While changing that logic may reduce certain barriers to entry for certain ESRs, there would be a larger, negative, impact to overall market efficiency and unnecessary increases to production costs which could ultimately result in higher consumer costs and increased uplift costs.

Developing the appropriate participation model to incorporate the five directives will require significant engagement with stakeholders and project developers to determine how developers perceive their resources being integrated and dispatched, how the grid operators believe these types of resources can best be deployed, and what is the most efficient utilization of these types of resources. Such coordination is necessary to ensure that the rules accurately value the services being deployed and appropriately dispatch energy storage to meet system needs.

2. Bidding Parameters for Electric Storage Resources

The NYISO generally agrees with the NOPR's proposal to incorporate ESR-specific bidding parameters that reflect the physical and operational characteristics of such resources. These bidding parameters should reflect the flexibility of new electric storage technology, including the ability to quickly transition from injecting energy to the system to withdrawing energy from the system. The NYISO cautions, however, that each region may value certain ESR capabilities differently, and the final rule should permit ISOs/RTOs the flexibility to develop bidding parameters that are tailored to their markets and reliability needs.

3. Eligibility to Participate as a Wholesale Seller and a Wholesale Buyer

As discussed above, the NYISO supports the Commission's goal to create a participation model that allows ESRs to be an eligible wholesale market seller and wholesale market buyer. Allowing flexibility for these types of resources to identify through their bids their willingness to buy energy and to sell energy will allow for efficient scheduling of these resources. Additionally, allowing these resources to set price when the offer to buy or sell is flexible (*i.e.*, allows the ISO to determine the schedule) is important and will allow for comparable treatment with other resources.

The NYISO also supports allowing resources to self-schedule their purchases or sales while being a price taker. However, the NYISO wishes to clarify that self-schedule offers will not allow the resource to participate as a supply and demand resource simultaneously. Self-schedule offers by their nature indicate to the ISO the resource's desired schedule. The NYISO also requests that a final rule on ESR offers for simultaneous participation as a supply and demand resource include an incremental cost construct whereby the ESR's offer price for demand is less than its offer price for supply. Any final rule on this issue should permit flexibility so that each ISO can determine an offer construct that best fits its software design.

The NYISO discourages creating price protections for ESRs when they are scheduled as demand because such treatment would not be comparable to the treatment of other resources that are scheduled as demand (*e.g.*, economic interchange exports and price capped load). Regional flexibility will permit the ISOs/RTOs the opportunity to treat resources comparably.

The NYISO is supportive of allowing resources that are 100 kW or larger to participate in the wholesale markets as well as be eligible to set price in those markets. The NYISO also supports ensuring that energy consumed by ESRs at wholesale rates is sold back to the grid at

wholesale rates. Allowing participation of ESRs in both the wholesale and retail markets presents operational and regulatory challenges that require more consideration and discussion. The NYISO does not advocate one way or the other, but rather requests that flexibility be maintained so that if a workable construct is developed it is given fair consideration.

B. Participation of DER Aggregators in the Organized Wholesale Electric Markets

The NOPR identifies, and the NYISO agrees, that there has been significant development in DER technology, and that DER have the potential to provide value both to the wholesale markets and bulk power system operation.[13] The NOPR defines DER as "a source or sink of power that is located on the distribution system, any subsystem thereof, or behind a customer meter," that includes, but is not limited to, "electric storage resources, distributed generation, thermal storage, and electric vehicles and their supply equipment."[14] The NYISO has a somewhat more broad definition of DER, defining DER as "a resource, or a set of resources, typically located on an end-use customer's premises that can provide wholesale market services but are usually operated for the purpose of supplying the customer's electric load." The NYISO has also proposed to allow small aggregations of Community Distributed Generation to provide wholesale market services as DER. Because this definition identifies a broader pool of DER, final rules that permit regional flexibility will permit the NYISO to fashion rules and market designs that meet its needs while still meeting the Commission's desired outcome of integrating DER into the wholesale Energy, Ancillary Service and Capacity markets.

[13] *Id*. P 103.

[14] *Id*. 1 n2.

The NOPR identifies that a main goal of the proposed rules is to remove barriers to entry for DER that are technically capable of participating in wholesale markets.[15] The NYISO shares this goal. As stated above, the NYISO is crafting market rules that propose to permit further participation of DER in the Energy, Ancillary Services, and Capacity markets. The rule sets that emerge from the DER Roadmap effort will permit dispatchable DER (*i.e.*, controllable resources) with various capabilities to participate in those markets. Although the NYISO is in the initial phases of a five year plan to integrate these resources, market participants, developers, and other interested stakeholders are working with the NYISO to determine appropriate market design concepts that will help accommodate the physical and operational characteristics of DER.

The NOPR identifies several market design challenges awaiting ISO/RTOs as these markets develop. The NYISO believes that the rules proposed in the NOPR are largely consistent with the market design elements contained in its DER Roadmap. The market design and eventual market participation rules that will develop out of the DER Roadmap will focus on integrating resources that cannot currently participate in the NYISO's wholesale markets, whether that restriction is due to size, technology, location, or other factors. Our goal is to open the NYISO's markets to all resources that can provide value to the bulk power system and wholesale markets.

Doing so is not without challenges, however, and the NYISO is undertaking a holistic approach to DER integration that will not only determine appropriate bidding parameters, but will also seek to enhance system planning and grid operations to ensure the wholesale markets send appropriate investment signals to developers and market participants.

[15] *Id.* P 124.

1. Eligibility to Participate Through an Aggregator

From the outset of its DER integration initiative, the NYISO has focused on DER aggregation concepts as a way to enable small resources to participate in the wholesale markets. The NOPR identified limits to the types of technologies that may aggregate to provide wholesale service as a barrier to entry,[16] a concern the NYISO has also heard from its stakeholders. In response, the NYISO has proposed to permit small scale DER to aggregate (with certain limitations) in order to meet minimum participation requirements. The NYISO will allow both homogenous aggregations as well as heterogeneous aggregations, though the potential benefits and drawbacks of each are still being evaluated. For example, a homogenous solar aggregation may not be able to provide the same services as an aggregation that combines solar technology with energy storage. It may, however, benefit from being able to leverage the NYISO's existing intermittent resource participation model. Whatever the manner of aggregation, the NYISO intends to treat dispatchable DER comparably to traditional generators while at the same time recognizing their unique capabilities. For example, traditional generators that are awarded capacity in a NYISO Capacity auction, with certain exceptions, currently have a Day-Ahead Market ("DAM") bidding obligation. The NYISO anticipates that ICAP Suppliers that are dispatchable DER will have similar DAM offer obligations, but with flexibility that matches the capabilities of the DER.

The NOPR also proposes to prohibit DER that are providing compensated services to the distribution system through retail programs (*e.g.*, net metering), or wholesale market programs (*e.g.*, demand response), from participating in a DER aggregation.[17] The NOPR states that this

[16] *Id.* P 105.

[17] *Id.* P 135.

will help prevent duplication of compensation for DER services.[18] The NYISO supports proposed rules that prohibit double compensation. However, the NYISO requests clarification on how the Commission intends to define the "same service."

The NYISO's existing market rules permit demand response resources to enroll in both NYISO-administered reliability-based demand response programs, as well as utility-administered local demand response programs. The NYISO activates its demand response resources on a Load Zone basis, while the utilities have the option to activate resources in a smaller geographic area. While the NYISO and a utility may simultaneously activate resources to respond to both zonal and local reliability issues, they may also activate resources on their own accord. One can argue that demand response resources are providing the "same service" — load reductions – for both the utility and the NYISO.

On the other hand, utilities can activate demand response to address local needs (such as feeder unloading), while the NYISO activates demand response to resolve, among other things, overloads of transmission facilities, bulk system voltage deviations, deficiencies in operating reserves, and system frequency deviations. In this respect, the same demand response resource, reducing the same load, may be serving different purposes. Again, the NYISO does not advocate one way or the other, but rather requests that flexibility be maintained so that if a workable construct is developed it is given fair consideration. Any final rule should also address the definition of the phrase "same service."

The NYISO also requests clarification on whether DER that are not part of a multi-DER aggregation (*e.g.,* a DER that is at least 100 kW and providing wholesale service on its own) is

[18] *Id.*

permitted to offer the "same service" to the wholesale markets and distribution system-level retail programs.

The NOPR also seeks comment on whether the Commission should establish, or whether it should permit ISO/RTOs to establish, minimum or maximum capability limits for DER participating in wholesale markets through a DER aggregator. The NYISO does not believe that establishing a minimum DER size that is eligible for aggregation is necessary at this time. It is, however, continuing to evaluate whether there should be a maximum DER size in an aggregation. Applying a maximum size would permit independent modeling of relatively large DER on the NYISO's system, and provide the NYISO's grid operators more operational awareness and control over DER that may be needed to address system conditions. Minimum and maximum resource sizes, however, may be appropriate for other ISO/RTOs, and the NYISO encourages the Commission to allow each organized market to determine appropriate operational and physical parameters for its system.

Finally, the NOPR proposes to require ISO/RTOs to permit DER aggregations to participate in the smallest increment of capability as is currently allowed for a particular resource type (*e.g.*, if the DER is modeled as a generator, it should be able to participate at the smallest increment of capability of a traditional generator),[19] and to permit DER to be their own aggregator.[20] The NYISO's existing DER market design proposal is for all aggregations, whether they intend to inject power to the grid or to reduce load (and consisting of any technology) to meet a minimum aggregation size of 100 kW. This minimum size qualification is the smallest increment the NYISO, at this time, believes it can accurately model, commit, and

[19] *Id*. P 136.

[20] *Id*. P 137.

dispatch with its current grid operations software.[21] The NYISO also agrees with the NOPR's proposal to permit DER to serve as their own aggregator, and intends to incorporate that concept into its market rules related to DER.

2. Locational Requirements for DER Aggregations

The NOPR proposes to require each ISO/RTO to establish DER aggregation locational requirements (*i.e.*, the geographic area from which a DER aggregation can collect resources) that are as geographically broad as technically feasible.[22] The NYISO is concerned about the operational and price formation impacts of a geographically broad DER aggregation due to the highly constrained nature of the New York transmission system. For example, if an aggregation consists of DER that are located on either side of a transmission constraint, dispatching the aggregation up or down would further aggravate the constraint. Additionally, there is no way for the ISO to ensure that the aggregator will be able to match the distribution factor and, therefore, the aggregator could further aggravate the constraint if the actual set of DER dispatched differs from the distribution factor. In this circumstance, the ISO would not readily know that the actual set of DER being dispatched differs from the distribution factor, which could affect reliability.

Instead, the NYISO has proposed in its DER Roadmap to limit the geographic footprint of a DER aggregation to only those resources that connect to the same transmission node, typically a transmission substation. Because the majority of DER will likely be connected to the distribution system, it is important to accurately represent DER impacts at their corresponding interface to the bulk power system to maintain bulk power system reliability. In addition, this

[21] The NYISO is studying the capabilities of its dispatch and commitment software to ensure that there are no unintended consequences of introducing resources sized less than 1 MW, including increased runtimes, failure of a solution, etc.

[22] *Notice of Proposed Rulemaking* P 139.

geographical limit to DER aggregations will help ensure DER compensation in the wholesale markets reflects the locational and temporal value of the DER aggregation on the bulk power system, as well as provide grid operators with the necessary flexibility to manage transmission system reliability. The NYISO believes that lowering the minimum size threshold of a DER aggregation to 100 kW and allowing these resources to be economically scheduled and set prices addresses the concern about restricting the opportunities for DER to participate in the NYISO's markets as a DER aggregation.

3. Distribution Factors and Bidding Parameters

In an effort to help ISO/RTOs get the information necessary to reliably operate the bulk power system, the NOPR proposes to allow ISO/RTOs to obtain certain information from each DER aggregation, including distribution factors.[23] Because the NYISO intends to limit DER aggregations to resources collected at a single transmission node, distribution factors are not needed to accurately dispatch DER aggregations. However, the NYISO supports the NOPR's proposals to allow ISO/RTOs to require DER aggregations to provide sufficient information required to reliably operate the bulk power system, and to accurately reflect resources in the wholesale markets. Integration of DER into the wholesale markets will require increased levels of cooperation among utilities, resources, aggregators, and the ISO/RTOs. That cooperation includes providing significant detail on resource operating and physical characteristics.

4. Information and Data Requirements

As stated above it is imperative that ISO/RTOs collect the information necessary to operate the bulk power system in a reliable manner. The specific information needed, however, is likely to vary by ISO/RTO. Therefore, the NYISO renews its request to permit regional

[23] *Id.* P 143.

flexibility in the final rule, allowing each ISO/RTO to collect the information it believes is necessary to operate its system.

5. Aggregation Modification

In order to permit more flexibility to DER aggregators, the NOPR proposes to require each ISO/RTO to revise its tariff to permit DER aggregators to modify its list of resources in an aggregation without un-registering and re-registering all of the resources in the aggregation. The NYISO supports this proposal, and intends to only require aggregators to advise the NYISO of any changes to the list of resources and to changes in the aggregation's performance output or operating characteristics.

6. Metering and Telemetry

As the NYISO was developing the DER Roadmap through its stakeholder process, a consistent concern raised among potential market participants was that metering and telemetry requirements may pose a significant barrier to entry. A common theme raised was that the measurement and verification standards needed for DER (both individual resources and aggregations) are likely to be different than for traditional central station generators. ISO/RTOs, however, need sufficient information to accurately capture real-time operating data, as well as after-the-fact data required for settlement.

In response, the NYISO has proposed to require DER aggregators to have six-second real-time metering and telemetry at the aggregation level. This level of data corresponds to the existing requirements for generators on a Point Identifier ("PTID") basis. PTID level data is submitted to the NYISO via real-time telemetry in order to monitor real-time operations. DER aggregators will also be required to provide after-the-fact meter data uploads for settlement purposes. In order to ensure that the NYISO and utilities have real-time situational awareness, real-time telemetry will either be sent directly to the utility (who then communicates with the

NYISO), or to the NYISO and the utility at the same time. Importantly, as it has noted throughout these comments, the final rules promulgated by the Commission should ensure that each ISO/RTO maintains the flexibility to create metering and telemetry requirements that are tailored to their own system.

7. ISO – DER – Utility Coordination

In order to facilitate participation of DER in the NYISO's wholesale markets, it will be important that the NYISO establish seamless coordination practices with New York State's utilities and with DER aggregators. Therefore, the NYISO supports the proposed rules related to DER aggregation registration and ongoing coordination efforts. Such coordination will ensure that participation of DER in the wholesale markets does not compromise the reliability or safety of the transmission and distribution systems.

To allow for accurate accounting of individual DER on the system, and to make all parties aware of DER obligations and potential risks to the grid, the NYISO intends to establish registration processes in coordination with the utilities and aggregators. This will allow the NYISO to accurately map the aggregation to the correct transmission location, and to verify that all DER that are part of an aggregation are capable of providing services to the NYISO. This coordination will also provide utilities with the opportunity to review all individual DER, assess DER impact on the distribution system, and inform the NYISO if individual DER or an aggregation will present any reliability risk to the distribution system.

Ongoing, real-time coordination will also be necessary to ensure safe and reliable operation of the transmission and distribution systems. The NYISO is currently working with New York State's utilities to develop the procedures and operating protocols that will be necessary to safely and reliably dispatch DER.

8. Market Participation Agreements for Aggregators

The NOPR proposes to require DER aggregators to execute agreements with the ISO/RTO that defines the roles, responsibilities, and relationships among the various parties.[24] The NYISO supports this proposal, and intends to develop registration agreements with DER aggregators that are similar to the existing agreements the NYISO has with demand response aggregators and traditional resources. While there are certain elements that will be common to most, if not all, such agreements, each ISO/RTO should be able to craft agreements appropriate for its markets.

C. Compliance Time Frame

Finally, the NOPR proposes to require each ISO/RTO to submit a compliance filing to demonstrate that it satisfies the proposed requirements in a forthcoming final rule within six months of the date of the final rule.[25] The Commission recognizes that implementation of reforms could take longer "due to the changes that may be necessary to each RTO's/ISO/s modeling and dispatch software," and seeks comments on the propose deadline for submitting the compliance filing and implementation.[26]

With respect to energy storage, the NYISO currently has a three-stage plan to fully integrate storage into the energy, ancillary service, and capacity markets. The first stage is to have a preliminary resource type design by the end of 2017. The second stage will be a full market design by the end of 2018. For the third and final stage, the NYISO expects to implement the designs by 2021 to avoid conflicting with the completion of the current upgrade

[24] *Id*. P 158.

[25] *Id*. P 159.

[26] *Id.* PP 159-160.

of the NYISO's energy and market management systems. With respect to DER, the NYISO's proposed plan is to have a preliminary market design proposed by the end of 2017, a full market design completed by the end of 2018, and anticipates implementation of the DER participation model and associated rules in 2021. Again, this will allow for the completion of the current update of its energy and market management systems.

Depending on the time frame for adopting a final rule, a compliance filing deadline of six months thereafter and another six months for implementation does not appear to be feasible. The NYISO has already begun its market design changes and implementation planning for DER and ESRs, yet will not have a preliminary design completed until the end of 2017 and will be able to complete implementation of all market systems, software systems, agreements and procedures only by the end of 2021. Other ISOs and RTOs may not be as far along as the NYISO in its efforts. Accordingly, at a minimum, the Commission should adjust its compliance timeline such that a filing is not required before the end of 2018 and implementation is required at the end of 2021.

III. CONCLUSION

WHEREFORE, for the foregoing reasons, the NYISO respectfully requests that the Commission (i) consider these comments, including the description of the NYISO's ongoing efforts to integrate electric storage resources and distributed energy resources, (ii) provide clarification on the definition of "same service," (iii) provide ISO/RTOs with the flexibility necessary to appropriately implement the Commission's directives in a manner that is appropriate and tailored to the markets they administer, and (iv) adjust its timeline for compliance filings and implementation to, at a minimum, the end of 2018 and 2021 respectively.

Dated: February 13, 2017

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 13th day of February 2017.

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