



# **Engaging the Demand Side Issue Discovery Report**

A Report by the  
New York Independent System Operator

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## Abstract

Through the 2023 Engaging the Demand Side Project the NYISO sought stakeholder feedback to identify potential improvements to its demand response programs that may further animate New York Control Area (NYCA) load. Stakeholders have requested that the NYISO investigate whether existing demand side program rules could be enhanced to better reflect evolved Demand Side Resource (DSR) capabilities while keeping participation options for these Resources simple. The NYISO is simultaneously investigating how to attract and retain Resources in the markets it administers to maintain reliability as it prepares to transition to the grid of the future.

In cooperation with its stakeholders the NYISO has identified potential market concepts for further investigation in 2024. NYISO believes these concepts may be able to increase participation opportunities for Demand Side Resources whose operating characteristics exceed the requirements of the reliability-based SCR model (*e.g.*, that can operate for longer than four consecutive hours) but are not capable of participating in the dispatchable Distributed Energy Resource (DER) model. Therefore, the NYISO proposes to investigate the development of a Day-Ahead only enhancement to the DER participation model that it believes will expand participation opportunities for DSRs. The NYISO does not intend to eliminate or modify the SCR model at this time, providing existing and future DSRs flexibility to choose the participation model that best fits their operating characteristics.

## Introduction

The NYISO's mission is to maintain power system reliability and enable competitive markets for New York State in a clean energy future. New York's electric grid is in a period of transition. New York State's Climate Leadership and Community Protection Act (CLCPA) has set a state goal to obtain 70% of New York State's electricity from renewable sources by 2030, which is expected to increase the state's reliance on intermittent power generators like solar and wind. Additionally, state agencies are facilitating the development and integration of at least 10,000 MW of distributed solar energy projects and at least 3,000 MW of energy storage projects<sup>1</sup>. For over a decade the NYISO's demand response programs have offered electricity consumers the opportunity to earn revenue by controlling demand through a variety of demand side programs and market products. The 2023 Engaging the Demand Side project sought to identify

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<sup>1</sup> NYSERDA. "Renewable Energy." Last modified 2022. <https://www.nysenda.ny.gov/Impact-Renewable-Energy>.

opportunities to enhance these demand side participation options, recognizing that demand side participation will play an increasingly important role in balancing supply and demand as the grid evolves.

This Report will: 1) summarize feedback gathered from NYISO Market Participants and other stakeholders regarding the NYISO's demand side participation options, 2) describe key aspects of the SCR program and DER participation model, 3) identify potential opportunities to enhance DSR participation in the NYISO markets, and 4) recommend further exploration of these ideas through the 2024 Engaging the Demand Side project.

## Special Case Resource Program Overview

The Special Case Resource (SCR) program is a reliability-based program that allows qualifying Responsible Interface Parties (RIP) to act as Installed Capacity (ICAP) Suppliers, offering Unforced Capacity (UCAP) in the NYISO-administered Capacity Auctions or through Bilateral Transactions. SCRs are classified as DSRs whose Load is capable of being interrupted at the direction of the NYISO via Load curtailment and/or by using an on-site generator, called a "Local Generator" (which is subject to special operating requirements). SCRs must be capable of sustaining Demand Reductions for a minimum of 4 hours consecutive hours each day. Small Customer Aggregations may also qualify as SCRs and can satisfy the SCR model's 100kW minimum requirement via the aggregation of small resources. SCRs are required to reduce their demand in an amount that is equivalent to the ICAP equivalent (ICE) of UCAP Sold at the direct instruction of NYISO Grid Operators during a declared SCR Event. SCRs receive an SCR Event advisory notification between 21 and 24 hours ahead of a given SCR Event. NYISO will confirm or cancel said SCR Event at least 2 hours before the SCR Event is set to begin.

## DER Participation Model Overview

The DER participation model allows DER of varying technology types to aggregate as a single Resource, an Aggregation, for the purpose of participating in the NYISO-administered Energy, Ancillary Services, and Installed Capacity Markets. Each Aggregation and all DER contained therein will be mapped to a single Transmission Node, which is a load bus that reflects the collection of electrical facilities to which DER connect. LBMPs will be calculated for each Transmission Node.

An Aggregation is a Resource comprised of two or more DERs; or one or more individual DSRs, at separate points of interconnection, that are grouped and dispatched as a single unit by the ISO, and for

which Energy injections, Energy withdrawals and Demand Reductions are modeled at a single Transmission Node. A DER is:

- A facility comprising two or more different technology types located behind a single point of interconnection with a maximum Injection Limit of 20 MW,
- A DSR, or
- A Generator, including an Energy Storage Resource, with a maximum injection limit of 20MW.

The NYISO's market rules permit individual DSRs to participate as an "Aggregation." This rule recognizes that DSRs have historically been eligible to participate in the Demand Side Ancillary Services Program (DSASP) and Day-Ahead Demand Response Program (DADRP) as a single Resource, and desire for DSRs to continue to have the opportunity for solitary participation after the retirement of the DSASP and DADRP.

Aggregations participating in the NYISO-administered markets take two forms: single Resource type Aggregations and DER Aggregations. Aggregations composed of a single Resource type (*e.g.*, Energy Storage Resources), not including DSRs, are classified as Single Resource Type Aggregations. Aggregations composed of multiple technology types, or that contain one or more DSRs, are classified as DER Aggregations.

Aggregations participating in the NYISO-administered markets are "dispatch-only," and do not submit, nor does the NYISO evaluate, unit commitment parameters. Aggregations must be capable of following 5-minute Base Point Signals – Aggregations seeking to provide Regulation must be capable of following a six second Base Point Signal. An Aggregation may submit Bids representing its entire operating range, which will result in a single aggregate Energy and Ancillary Services schedule and a single settlement from the NYISO. Aggregators are able to use any combination of qualified DER facilities within a given Aggregation to meet its Energy and Ancillary Services schedules. DSRs participating in an Aggregation will still be subject to the requirements of FERC Order No. 745, as implemented through the NYISO's Net Benefits Test and the Monthly Net Benefit Threshold (MNBT).

More detailed information regarding the DER Participation Model can be found in the Aggregation Manual on the NYISO website: [www.nyiso.com/manuals-tech-bulletins-user-guides](http://www.nyiso.com/manuals-tech-bulletins-user-guides).

## Feedback Collection Methodology

NYISO began collecting feedback from external Stakeholders at the March 22 and March 23, 2023,

Engaging the Demand Side meetings. These meetings were divided topically and by sector: the March 22 meeting focused on the Commercial and Industrial Sector, while the March 23 meeting focused on the Residential/Mass Market Sector. The NYISO continued to gather feedback from Market Participants in additional meetings held throughout Q2 2023, and presented at the May 25 and September 25, 2023, Market Issues Working Group (MIWG) meetings. The May presentation presented stakeholder feedback, while the September presentation focused on identifying potential market improvement opportunities based on both external stakeholder and NYISO staff feedback.

## Mass Market/Residential Sector Feedback

Mass Market/Retail Sector stakeholders reported feedback regarding the 2019 DER participation model's telemetry and DER sizing requirements.

### DER Telemetry Requirements

The NYISO requires each Aggregation to provide real-time telemetry communication nominally on a six second basis to the applicable Transmission Owner and NYISO, and for each DER participating in an Aggregation that is at least 100 kW to provide real-time telemetry to its Aggregator. Six-second telemetry plays an important role in informing NYISO grid operators of an Aggregation's operating status in Real-Time; however, stakeholders have stated that these telemetry requirements may be cost-prohibitive for some DER. Note that DER with a capability of less than 100 kW can utilize the NYISO's alternative telemetry rules, but stakeholders are concerned that DER whose size puts them just beyond the 100 kW alternative telemetry threshold will not earn enough revenue to justify the costs of investing in infrastructure supporting 6-second telemetry.

### <10kW DER Participation

Several stakeholders have expressed a desire to eliminate the NYISO's proposed 10kW minimum size for individual DER participation. NYISO is concerned that eliminating its proposed size floor for individual DER may significantly increase the number of small DER seeking to enter the wholesale markets, therefore increasing administrative costs associated with DER registration and enrollment and individual unit performance measurement and verification processes. Complications arising from this additional administrative burden could put the NYISO at risk of violating tariff-directed deadlines for DER enrollment. Software automation being developed for Order 2222 compliance may help to ease some of the administrative burden associated with supporting <10 kW DER, but those changes will not be in place until at least 2026. The NYISO has also evaluated potential market rule changes that would allow it to

better accommodate <10kW DER participation, but those changes would come at the cost of reduced NYISO oversight and may therefore pose a risk to grid reliability.

## Commercial and Industrial Sector Feedback

C&I Sector Stakeholders report that the operational capabilities of DSR participating in the SCR program vary, and that some DSRs have capabilities that exceed basic program requirements (*e.g.*, can start on less than twenty-one hours' notice or operate for a period longer than four consecutive hours). Over time DSR capabilities have evolved, and Stakeholders express the desire to develop new or revised market rules that better reflect the evolving capabilities of SCRs.

### SCR Energy Duration

The NYISO's market rules require SCRs to be able to reduce load for a period of at least four consecutive hours and are subject to the ICAP market payment structure applicable to a Resource with a four-hour Energy Duration Limitation (EDL). Stakeholders have indicated that at least some SCRs are able to operate for a longer duration (*e.g.*, for six or eight hours), and therefore may be able to comply with the requirements for Resources with a six or eight-hour EDL, and have their capacity valued like other Resources with a six or eight-hour EDL.

### Varied Preferences Regarding Event/Operational Frequency

Stakeholders expressed a variety of opinions on the frequency with which the SCRs they represent can be deployed. Several stakeholders noted that large industrial sector SCRs could support multiple deployments of four hours or less within a given week, but sustained periods of increased frequency may negatively affect the plant's ability to meet core business obligations. Additionally, increased operational frequency becomes considerably less sustainable if event duration is increased beyond 4 hours. In other words, several Stakeholders believe it is easier to support multiple 4-hour events within a given week than it would be to support multiple 6-hour events within a given week. Commercial sector stakeholder feedback indicates that SCRs in that sector have relatively more operational flexibility, particularly when utilizing automated building management systems to control HVAC, refrigeration, and other Load. These SCRs may be better positioned to respond to events lasting more than 4 hours with more frequent deployments than other types of SCRs, without significant impacts to core business functions.

### Startup/Shutdown Times and Notification Requirements

Some stakeholders have indicated that they could respond to an SCR Event given less than the standard 21/24 hour SCR Event advisory notification. Several SCRs, such as those using a Local Generator

or automated building management controls, estimate that required notification for SCR Event response could be decreased to as low as 30 minutes. Other SCRs indicated they could invest in technology that automates SCR Event response, decreasing required notification time to 2-3 hours.

A subset of stakeholders was asked if near real-time notification of an upcoming SCR event would pose any operational or financial risk to the core business of the SCR(s) they represent, considering a shorter notification time might reduce the ability of the SCR's core business to accommodate an SCR Event. Stakeholders did not believe that a shorter notification time would meaningfully increase their potential offer prices, but that it would reduce core business adaptability and could impact core business functions (*e.g.*, by removing a production plant's ability to increase production ahead of an SCR Event to account for subsequent down time).

### **Impact of SCR Business Functions on Wholesale Market Design**

Stakeholders have stressed the importance of simple participation options for SCRs, making clear that wholesale Energy market participation is not the primary business function of these Resources. There is concern amongst external Stakeholders that SCR primary business functions are not wholly compatible with more complex participation models like the dispatchable DER model, specifically, the obligations associated with Energy market participation, *i.e.* bidding and scheduling.

## **NYISO Staff Feedback**

The NYISO believes that any market rule enhancements that it considers in the pursuit of solutions to stakeholder feedback must support the grid of the future as described in the Grid in Transition whitepaper, in which the NYISO presents its expectation of increased penetration of intermittent generation and storage, and a correlated reduction in traditional, controllable, thermal generation. Controllable assets, including flexible DSRs, will be critical to maintaining grid reliability, and the NYISO desires to provide grid operators access to more of these Resources. The NYISO expects that including DSRs in the economic dispatch model by way of a Day-Ahead only DER enhancement will simultaneously address external and NYISO stakeholder feedback gathered as part of the Engaging the Demand Side project.

### **Impracticality of SCR Program Enhancements**

As part of the 2023 Engaging the Demand Side project, NYISO staff investigated potential enhancements to the SCR program to address external stakeholder feedback. For example, the NYISO considered moving the program's 4-hour Energy duration requirement to a 6-hour Energy duration

requirement and modifying the SCR program to allow Resources to better reflect their operating capabilities. The SCR program, however, relies heavily on manual administration, making any such changes administratively and operationally impractical.

For example, SCR Event scheduling and SCR performance auditing are both supported by manual processes, the former requiring NYISO grid operators to take manual, out-of-market actions during times in which grid reliability already requires extra attention. These processes benefit from the SCR model's standardized rules such as each SCR being required to interrupt load for 4 hours, the 21/24 hour DA advisory notice, and all Resources in a Load Zone being called for the same time period. In other words, adding the stakeholder-requested flexibility to these processes is expected to affect the ability of NYISO grid operators to respond to system conditions quickly and efficiently. Making the requested modifications to the SCR program would require Grid operators to understand the unique operating characteristics of individual SCRs to determine which Resources are best positioned to respond to a given set of conditions.

Additionally, NYISO is concerned that shifting the program from a 4-hour duration requirement to a 6-hour duration requirement could result in 4-hour SCRs being unable to comply with the modified duration requirement.

#### **Automation of the SCR Program**

Modifying the SCR program to incorporate stakeholder feedback and automating those new program features would be a significant undertaking and the NYISO believes it would be an inefficient allocation of staff resources. NYISO has already developed complex software for the DER participation model that accommodates the varying physical and operational characteristics of DSRs as described and requested by external stakeholders. Rather than developing new software to enable economic dispatch of SCRs, the NYISO believes that utilizing existing software, which was recently upgraded to integrate DER and Aggregations into the NYISO markets, is a more efficient method by which to address stakeholder feedback.

#### **Perpetuation of Out-of-Market Actions and a Grid in Transition**

Expansion of the SCR model would perpetuate the use of out-of-market actions in utilizing these Resources to address emerging system conditions. This runs contrary to the needs of the future grid as laid out in the Grid in Transition whitepaper and as stated previously in this report, which called for increased grid adaptability in the face of an increased penetration of intermittent generating resources and storage. NYISO believes that procuring demand response capability through the economic dispatch model, as will be done in the DER model, helps to add needed flexibility and adaptability to the system,

and enables the NYISO to utilize those Resources in balancing supply and demand as part of day-to-day operation of the grid.

In addition to helping maintain grid reliability, including additional DSRs in the economic dispatch, even if only in Day-Ahead, helps minimize the total production cost of running the grid. Including additional Resources in the optimization would allow the market software to come to a more economically efficient market solution and could cause it to forgo the scheduling of costlier Resources, utilizing Day-Ahead only DSRs in their place.

### **Advantages of Addressing Stakeholder Feedback Through the DER Participation Model**

The NYISO believes that parts of the existing DER participation model can be utilized in partially addressing stakeholder feedback regarding DSR capabilities. For example, the 2019 DER Participation Model's ICAP market rules support a wide range of Resource capabilities, more specifically 2/4/6/8 hour Energy Duration Limitations.

The NYISO's enrollment processes and documentation requires submission of a broad array of unit operating parameters and characteristics. These enrollment characteristics, combined with Bid data, will enable the NYISO's bidding and scheduling software to accurately schedule a DSR consistent with its actual operating characteristics and costs, rather than as part of a zonal block of demand response.

The NYISO appreciates stakeholder feedback that wholesale market participation via the DER Participation Model is more complex than participation via the SCR program. Resources participating via the DER model are subject to additional Capacity and Energy market rules and obligations, to different Energy Settlement rules, and to more granular data reporting requirements than their counterparts in the SCR program, which may not be suitable for all DSRs. As part of this proposal, NYISO is recommending we maintain the SCR program in its current state.

## **NYISO Proposal to Address Feedback**

In response to stakeholder feedback and projected system needs, the NYISO will explore the development of potential market rules that would permit DSRs to participate in the Day-Ahead Market. Further development of participation use cases will be beneficial to assess and validate the potential utilization of this option. At this time, the NYISO envisions a potential market concept that would allow DSRs to submit Day-Ahead (DA) bids and receive a binding DA schedule without re-evaluation of said schedule in the Real-Time Market. Energy market participation would still be subject to FERC Order No. 745's directives regarding payment for Demand Reductions. These DSRs would also be eligible to

participate in the ICAP market, and would be able to register with a 2, 4, 6, or 8-hour Energy duration, but would be required to comply with the Day-Ahead Bid/Schedule/Notify rules applicable to other types of ICAP Suppliers.

## Topics for Consideration in 2024

The DER participation model was designed as a dispatch-only Aggregation model, which, by definition, makes Real-Time Energy market participation an integral part of the program. It was not designed with Day-Ahead only participation in mind. Therefore, NYISO will need to investigate how such an enhancement would impact core aspects of the DER participation model, including the ability of DSRs to aggregate, the application of the MNBT, and bidding.

### Day-Ahead Only Bidding

Day-Ahead Only Energy bidding is not something that the NYISO currently supports for DSRs outside the context of the DADRP, which utilizes a combination of LSE-submitted Load bids and LSE-submitted Demand Reduction bids as core tenants of its basic framework. This approach is most likely not applicable in the context of this Day-Ahead Only proposal, meaning the NYISO would need to develop new rules/methods to allow DSRs to submit Day-Ahead Only Energy bids to the NYISO. NYISO is chiefly investigating whether existing bid modes can be utilized by NYISO software in enforcing Day-Ahead Only bidding/scheduling behavior, and whether other market rules, like those for bilateral transactions between Resources and trading hubs, can help inform the development of Day-Ahead Only bidding rules.

### Aggregating

NYISO needs to determine if and how Day-Ahead Only DSRs should be allowed to aggregate, as dispatchable DER and SCRs are able to. Aggregation of multiple DSRs is not required for participation in the 2019 DER participation model. DSR participating as a single DER Aggregation must, however, be able to independently satisfy the DER model's minimum bidding requirement of 100 kW.

If NYISO finds that aggregation of Day-Ahead Only DSRs is feasible, NYISO would then need to consider if it is appropriate to place rules on Day-Ahead Only Aggregation composition. For example, NYISO may find it must require all DSRs within a Day-Ahead Only Aggregation to have the same start-up time to aggregate.

### Application of the MNBT and Order 745 Compliance

Order No. 745, promulgated in 2011, provides that when a demand response resource participating in

an ISO/RTO-administered energy market can balance supply and demand as an alternative to generation, and when the dispatch of a demand response resource is cost-effective as determined by a net benefits test, the demand response resource must be compensated for its demand reduction in the energy market at the applicable locational marginal price. Order No. 745 compliance is implemented differently between the NYISO's DADRP and DSASP programs and the DER participation model. The current DER model applies the MNBT to supplied Demand Reductions post hoc during the NYISO settlements process. In contrast, the NYISO utilizes a Monthly Net Benefit Offer Floor in determining a binding bid floor for DADRP Resources, barring those Resources from submitting Bids below the established offer floor for a given month.

The NYISO is considering options for appropriate application of the Order No. 745 requirements to DSRs that participate via the Day-Ahead Only proposal.

### **ICAP Supplier Bid/Schedule/Notify Obligations**

Each ICAP Supplier, subject to certain exemptions, is required, daily, to: (i) schedule a Bilateral Transaction, (ii) Bid Energy in each hour of the Day-Ahead Market, or (iii) notify the NYISO of any full or partial derates. This market rule, commonly known as the "Bid/Schedule/Notify" rule, does not apply to SCRs. The NYISO is considering how to apply the Bid/Schedule/Notify rule to DSRs that participate via the Day-Ahead only proposal.