NYISO 2023 Annual Report on Demand Response Programs

I. Program Descriptions

The New York Independent System Operator, Inc. ("NYISO") administers four demand response programs to enhance system reliability and reduce overall production costs.

Two of the programs—the Emergency Demand Response Program ("EDRP")[1] and the Installed Capacity – Special Case Resource ("ICAP/SCR") program—support the reliability of the New York Control Area. Both programs are designed to reduce power consumption by directing Demand Side Resources to reduce load or to use qualified Local Generators to remove load from the system during grid emergencies or when reserve shortages are anticipated or actually occur. All New York Control Area ("NYCA") Loads are eligible to take part in these programs. Aggregators enroll Demand Side Resources and coordinate with the NYISO to notify Resources when the NYISO deploys demand response.

The NYISO also offers two economic demand response programs: the Day-Ahead Demand Response Program ("DADRP") in the Energy market, and the Demand-Side Ancillary Services Program ("DSASP") in the Ancillary Services market. The DADRP allows NYCA Loads to offer their load reductions into the Day-Ahead Market ("DAM") to supply Energy. This program allows flexible loads to effectively increase the amount of supply in the market and moderate Energy prices. The DSASP provides program participants with an opportunity to offer their load curtailment capability into the DAM and/or Real-Time Market ("RTM") to provide Operating Reserves and Regulation Service.

Each of the four programs is described in greater detail below.

Emergency Demand Response Program

The EDRP offers Demand Side Resources the opportunity to earn the greater of $500/MWh or the prevailing Locational-Based Marginal Price ("LBMP") for curtailing energy consumption when called upon to reduce Load by the NYISO. EDRP Resources are enrolled by Curtailment Service Providers ("CSPs"), which serve as the interface between the NYISO and Resource.[2] Load curtailment by EDRP Resources during NYISO-called events is voluntary.

[1] Capitalized terms not defined herein have the meaning ascribed to them in the NYISO's Market Administration and Control Area Services Tariff ("Services Tariff").

[2] An individual EDRP Resource may, if it meets the applicable registration requirements, act as its own CSP.

Installed Capacity – Special Case Resource Program

Special Case Resources ("SCRs") are a type of Demand Side Resource that may offer Unforced Capacity ("UCAP") into the NYISO's ICAP market as ICAP Suppliers. SCRs are enrolled by Responsible Interface Parties ("RIPs") which may aggregate multiple SCRs and which serve as the interface between the NYISO and the Resources.[3] Resources may be enrolled in either the EDRP or the ICAP/SCR program, but not both. SCRs that have sold ICAP are obligated to reduce their load when called upon by the NYISO with two or more hours in-day notice, and with day-ahead notice from the NYISO.

In addition to receiving a capacity payment for the SCRs they enroll, RIPs are eligible to receive Energy payments during an event or test, based on hourly market prices, plus a Bid Production Cost Guarantee ("BPCG") payment to make up for any difference between the market price received and their block offer price across the day. Energy payments are calculated using the same performance calculation used by the NYISO to pay for the performance of EDRP Resources.

Enrolled SCRs must verify their enrolled load reduction capability in each Capability Period through actual performance in an event or test. Failure of an SCR to reduce load during an event or test may result in penalties being assessed to the applicable RIP in accordance with the NYISO's Services Tariff and the ICAP/SCR program rules and procedures.

Targeted Demand Response Program

The Targeted Demand Response Program ("TDRP"), introduced in July 2007, is a reliability-based demand response program that deploys existing wholesale market EDRP Resources and SCRs on a voluntary basis in targeted sub-zonal load pockets to solve local reliability problems at the request of a Transmission Owner. The TDRP is currently available only in Load Zone J (New York City). RIPs are eligible to receive Energy payments during an event or test based on hourly market prices plus a BPCG payment. Energy payments are calculated using the same performance calculation used by the NYISO to pay for the performance of EDRP Resources.

Day-Ahead Demand Response Program

The DADRP allows Demand Side Resources to offer load curtailment into the DAM as an Energy supply resource. Resources participating in the DADRP submit offers by 5:00 a.m. specifying the hours and amount of load curtailment for the following day, and the price at which

[3] An individual SCR may, if it meets the applicable registration requirements, act as its own RIP.

they are willing to curtail. DADRP Resource offers are subject to the Monthly Net Benefit Offer Floor.[4]

DADRP offers are structured like those of generation resources: they specify minimum run times and the hours in which they are available. Demand Side Resources with Load reductions scheduled in the DAM are obligated to curtail the next day. DADRP Resources are also eligible for BPCG payments. Failure of a DADRP Resource to curtail its Load may result in penalties being assessed to the applicable Resource in accordance with the NYISO's Services Tariff and the DADRP program rules and procedures.

Demand-Side Ancillary Services Program

The DSASP provides Demand Side Resources (that meet telemetry and other qualification requirements) an opportunity to offer their load curtailment capability into the DAM and/or RTM to provide Operating Reserves and Regulation Service. Resources must qualify through standard resource testing requirements in order to provide these services. Offers are submitted through the same process as generation resources: Resources participating in the DAM submit offers by 5:00 a.m. specifying the Ancillary Service they are offering (Operating Reserves, and/or Regulation Service) along with the hours and amount of load curtailment for the following day, and the price at which they are willing to curtail. DSASP Resources are not eligible to be scheduled to provide Energy in the DAM. DSASP Resources may also submit RTM offers up to 75 minutes before the hour of the offer.

The dispatch of the DSASP Resources' Operating Reserves to Energy is determined in the RTM by the Real-Time Dispatch ("RTD") software. When RTD instructs a DSASP Resource to provide Energy, the DSASP Resource must decrease the Load being served by the NYISO. The dispatch of Regulation Service into Energy is issued in the RTM via an Automatic Generation Control ("AGC") signal. Depending on system needs, the AGC may instruct DSASP Resources to either increase or decrease the NYISO-scheduled Energy they are consuming.

DSASP Resources that are converted to Energy in real-time are not paid for that Energy. Instead, DSASP Resources are eligible to receive a Day-Ahead Margin Assurance Payment ("DAMAP") to make up for any balancing differences between their Day-Ahead Operating Reserves or Regulation Service schedule and their real-time dispatch. Eligibility to receive DAMAP is subject to performance requirements. Performance indices are calculated on an interval basis for both Operating Reserves and Regulation Service. DAMAPs are adjusted by the performance index for the services provided.

[4] The Monthly Net Benefit Offer Floor prices are available at: https://www.nyiso.com/demand-response.

II. 2023 Program Summary

EDRP and ICAP/SCR Program

As of July 31, 2023, a total of 24 CSPs and RIPs had eligible Resources enrolled in the NYISO's EDRP and ICAP/SCR program.[5] Participating CSPs and RIPs include:[6]

- 1 Transmission Owner ("TO");
- 11 Competitive Load Serving Entities ("LSEs") that are not TOs; and
- 12 Aggregators that are not an LSE or TO.

These figures represent a net decrease of five CSP/RIPs from 2022. This was a result of a decrease of two Aggregators and three competitive Load Serving Entities.

As of July 31, 2023, a total of 7,981 Resources[7] were enrolled in the NYISO's EDRP and ICAP/SCR programs. These Resources were capable of providing a total of 1,293.4 MW of demand response. This corresponded to a 4.78% increase in the enrolled MW versus 2022 and represents 4.5% of the 2023 Summer Capability Period peak demand of 28,735 MW. Of the 7,981 Resources, 770 participated in the EDRP program, 4,097 were ICAP/SCR Resources with unsold capacity,[8] and the remaining 3,114 Resources participated in the NYISO's ICAP/SCR program.

[5] For several years, the date customarily used for reporting the NYISO's demand response program participation statistics was August 31. In 2011, the NYISO changed its reporting date from August 31 to July 31 to better align with several other reliability and planning reporting requirements. A July 31 reporting date also provides better transparency with other reporting requirements for the NYISO's demand response programs. The NYISO has evaluated the difference in enrollment between July and August and found it to be *de minimis* (2-3%). The data provided herein is based on a snapshot of the programs on July 31, 2023.

[6] In previous reports, the NYISO identified four categories of curtailment service providers. In addition to the three categories described in this report, the NYISO identified an additional organizational category called "Direct Customer" for entities that registered as a Market Participant with the NYISO to participate on their own behalf in any of the NYISO's demand response programs. The NYISO is able to distinguish between the categories of curtailment service provider based on provider name and certain data provided by the Market Participant. The NYISO does not require Market Participants to identify the category of provider in which they fit. Over time, it became increasingly difficult to identify Direct Customers based on the information provided to the NYISO and to provide an accurate accounting of such providers. To maintain better consistency of reporting and accuracy, the NYISO has removed the "Direct Customer" organizational category, and merged those providers into the Aggregator or Competitive LSE category as appropriate.

[7] A Resource is either a single SCR or EDRP Resource. A Small Customer Aggregation (SCA) is equivalent to one SCR or EDRP Resource, the total number of SCR and EDRP end-use locations including those represented by SCAs is 9,814.

[8] ICAP/SCR Resources with unsold capacity are those Resources that did not sell their full available capacity.

The ICAP/SCR program represents 90.35% of the total Resources enrolled in the NYISO's reliability-based demand response programs and 99.05% of the total MW enrolled in those programs.

Aggregators and competitive LSEs currently represent 96.8% of enrolled MW in EDRP and ICAP/SCR, up from 96.5% of enrolled MW in 2022. The remaining 3.2% are enrolled by TOs. In the ICAP/SCR program, two participants enrolled through their TO, while all other ICAP/SCR Resources were enrolled through other sources.

The TDRP, which deploys EDRP and ICAP/SCR Resources in the various sub-zonal load pockets in Zone J for local reliability, includes 90.1% of the total New York Control Area ("NYCA") EDRP Resources and 93.1% of total NYCA EDRP MW. The TDRP also includes 75.08% of total NYCA ICAP/SCR Resources, representing 34.5% of the total NYCA ICAP/SCR MW.

Day-Ahead Demand Response Program

DADRP enrollment has been static for several years and enrolled Resources have not submitted demand reduction offers for more than ten years. DADRP enrollment remained unchanged since the January 2023 Report.

Demand-Side Ancillary Services Program

There are twelve Demand Side Resources actively participating in the DSASP as providers of Operating Reserves. These Resources represent 414.3 MW of capability and had an average performance of 177% during the analysis period of May 2023 through December 2023[9].

III. Reliability Program Participation Detail

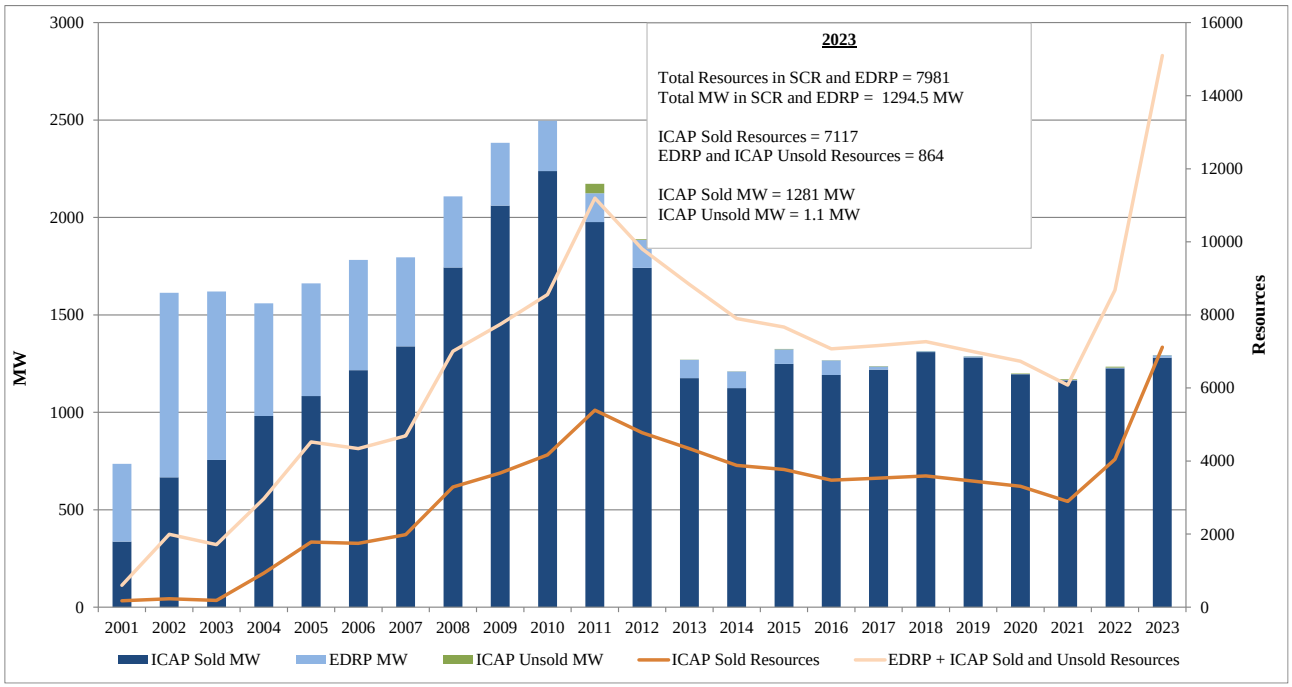
Historical Enrollment Data

Historical enrollment data for the NYISO's reliability demand response programs is presented in Figure 1. The figure plots the enrollment in the NYISO's reliability-based programs from inception through July 2023. The stacked bar charts plot enrolled MW by program and year, and the lines plot the number of Resources by program and year.

[9] The Demand Side Ancillary Services Program ("DSASP") does not operate through a monthly enrollment model. Specific to 2023, the program experienced increased participation after the normal reporting period of July 2023. Therefore, the NYISO deemed it appropriate to extend the reporting period for this program through December 2023.

From May 2001 through July 2023, combined enrollment in EDRP and ICAP/SCR has grown from approximately 200 MW to 1294.5 MW. The total number of Resources has increased from approximately 200 in March 2001 to 7,981 in July 2023.

Figure 1: Historical Enrollment of Resources and MW in NYISO Reliability Programs



Changes in Program Enrollment – 2022-2023

Enrollment data for the NYISO's reliability-based demand response programs for 2022 - 2023 is provided in Table 1. The number of ICAP/SCR Resources and the enrolled MW have increased since the 2022 report. The number of EDRP Resources and the enrolled MW have increased over the past year.

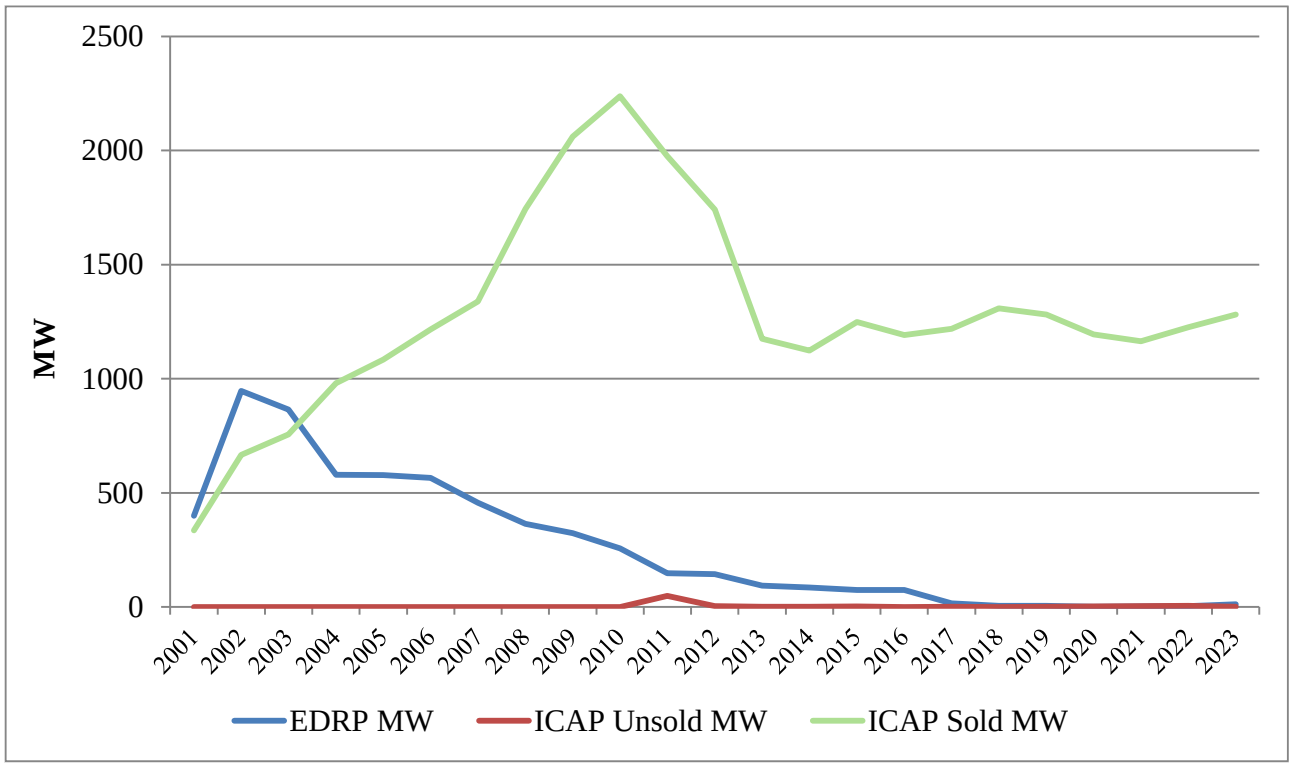
Table 1: Program Enrollment by Resource – 2022-2023

	2023		2022			Percent Change From 2022 to 2023		MW per Resource		
	Count	MW	Count	MW	MW Change	Resource Count	Enrolled MW	2023	2022	Percent Change
EDRP	770	12.3	522	3.4	8.9	48%	258%	0.0	0.01	142.9%
ICAP Unsold	94	1.10	60	4.97	-3.9	57%	-78%	0.01	0.08	-85.8%
ICAP Sold	7117	1281.0	4048	1226.0	55.1	76%	4%	0.2	0.30	-40.6%

Figures 2 and 3 present enrollment statistics in the EDRP and ICAP/SCR program from 2001 – 2023. Figure 2 presents the data by MW enrolled, while Figure 3 presents the data by

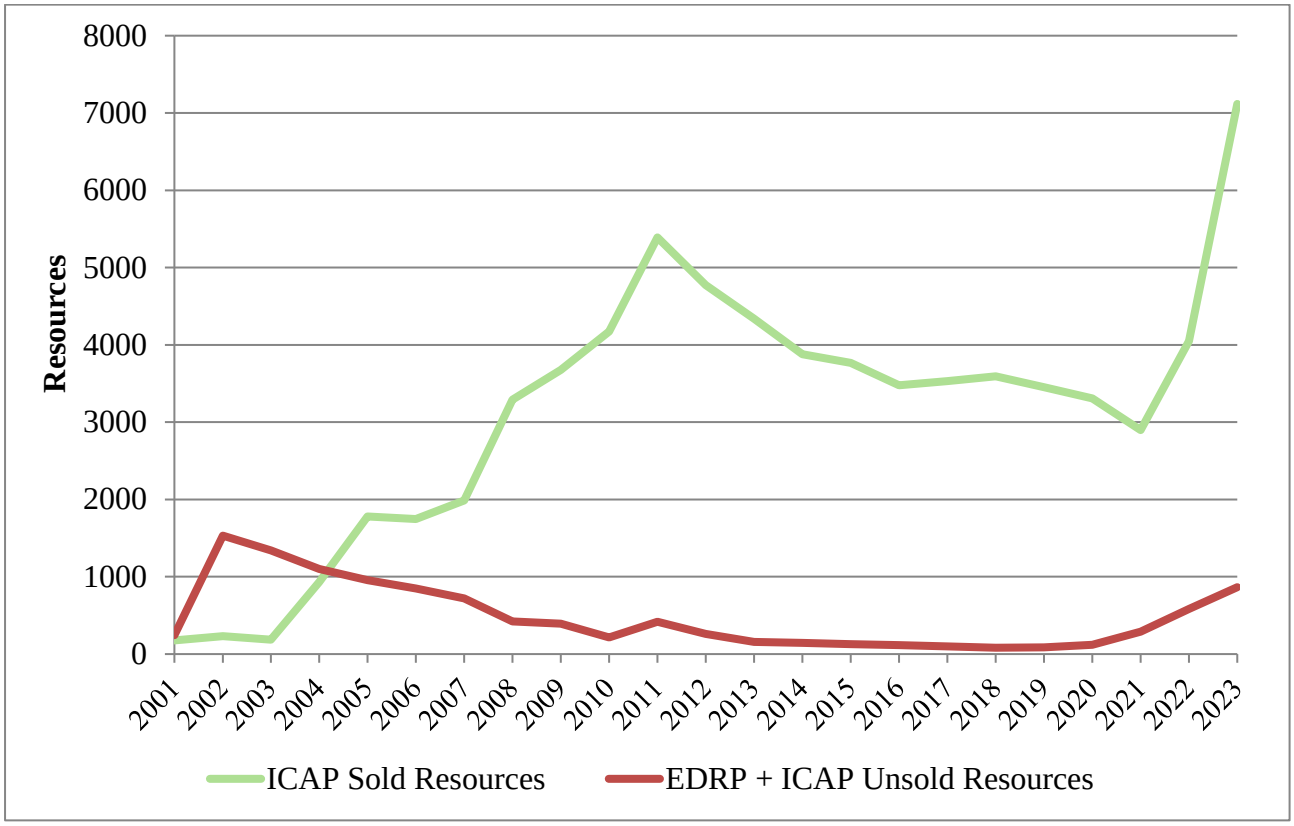
number of Resources.[10] Since making the EDRP and ICAP/SCR program mutually exclusive, there has been a general decline in the number of enrolled MW and Resources in the EDRP. There was an increase to ICAP Sold Resources in 2023; however, most of the new Resources were small facilities between 1-5kW and therefore did not materially impact the total program MW.

Figure 2: Enrollment in the NYISO's EDRP and ICAP/SCR Program by MW, 2001-2023



[10] ICAP/SCR program enrollment of Resources began in 2004. In 2001 and 2002 Resources could enroll in both the EDRP and ICAP/SCR program, but beginning in 2003, Resources were prohibited from simultaneously enrolling in both programs.

Figure 3: Enrollment in the NYISO's EDRP and ICAP/SCR Program by Resource, 2001-2023



2022-2023 EDRP and ICAP/SCR Program Enrollments

At the end of July 2023, 7,981 Resources, with a total of 1,294.5 MW of demand response capability, were enrolled in NYISO's EDRP and ICAP/SCR program. This represents a 4.87% increase from the total enrolled demand response capability in 2022. Of the 7,981 Resources, 770 were enrolled in the EDRP and 7,211 were enrolled in the ICAP/SCR program, including SCRs treated as EDRP, as further discussed in the ICAP/SCR Resource Aggregations section below. ICAP/SCR Resources represent 90.35% of the total reliability program Resources and 99.05% of the total reliability program MW. Table 2, below, provides summary data for the EDRP and ICAP/SCR program.

Table 2: 2023 Program Enrollment Summary by CSP and RIP Type

		EDRP			ICAP Unsold			ICAP Sold		
No. of Unique MPs	Agent Type	No. of CSPs	No. of Resources	MW	No. of RIPs	No. of Resources	MW	No. of RIPs	No. of Resources	MW
12	Aggregator	0	0	0.0	*	16	0.91	12	*	1195.2
0	Direct	0	0	0.0	0	0	0.00	0	0	0.0
11	Competitive Load Serving Entity	*	770	12.3	*	78	0.20	*	4107	44.4
1	Transmission Owner/LSE	0	0	0.0	0	0	0.00	*	*	41.4
24	Total	*	770	12.3	7	94	1.10	22	7117	1281.0

*Entries in this category have been masked for confidentiality in this table.

2023 SCR enrollments were primarily provided through non-TOs representing 99.9% of participating Resources and 96.8% of the enrolled MW. Similarly, for 2023 EDRP enrollments and ICAP/SCR Resources with unsold capacity, non-TOs represented 100% of participating Resources and 100% of the enrolled MW.

Table 3 provides additional program enrollment details by Load Zone. Although the NYISO does not collect specific resource class data, demand response resources in Load Zones A through E are typically industrial and retail resources, while those in Load Zones J and K include commercial office, retail, and multi-family residential resources.

Table 3: 2023 Program Enrollment by Load Zone

	EDRP		ICAP Unsold		ICAP Sold	
Zone	No. of Resources	MW	No. of Resources	MW	No. of Resources	MW
A	0	0.0	0	0.00	165	230.6
B	0	0.0	0	0.00	128	29.5
C	0	0.0	0	0.00	156	79.8
D	0	0.0	*	0.23	21	225.1
E	0	0.0	0	0.00	81	30.3
F	0	0.0	0	0.00	148	123.8
G	0	0.0	0	0.00	96	40.2
H	17	0.1	74	0.07	30	11.6
I	59	0.7	*	0.50	600	32.7
J	694	11.5	10	0.31	5401	442.2
K	0	0.0	0	0.00	291	35.3
Total	770	12.3	94	1.10	7117	1281.0

*Entries in this category have been masked for confidentiality in this table.

ICAP/SCR Resource Aggregations

NYISO identifies ICAP/SCR enrollments by Resource, and they may represent either individually enrolled Resources or aggregations of Resources that are enrolled as a single demand response Resource. Table 4 contains data on ICAP/SCR program participation. As of July 31, 2023, 7,187 Resources were enrolled in aggregations. These aggregations provided 1,106.8 MW of the 1,282 MW enrolled in the ICAP/SCR program. The remaining 175.3 MW of demand response capacity in the ICAP/SCR program came from 20 individually enrolled Resources.

Table 4: Detail of 2023 ICAP/SCR Program Participation Level by Resource Type

	ICAP Sold		ICAP Unsold	
Resource Type	No. of Resources	MW	No. of Resources	MW
Individual Resources	20	174.9	*	0.40
Aggregated Resources	7097	1106.1	*	0.70
Total	7117	1281.0	94	1.10

*Entries in this category have been masked for confidentiality in this table.

Table 4 also provides information for ICAP/SCR Resources that did not sell any capacity in the July 2023 capacity market auctions. This information is included because when an ICAP/SCR Resource offers its load reduction in a NYISO auction and that load reduction is not sold (or when a Resource's derated MW value is zero), the Resource's enrolled capacity is automatically included in the EDRP.[11]

TDRP Enrollment

Load Zone J is currently the only Load Zone with Resources participating in the TDRP. This Load Zone has been divided into sub-zonal load pockets designated by Consolidated Edison Company of New York, Inc. ("Con Edison"). Resources enrolled in the EDRP and ICAP/SCR program are assigned to one of the various sub-zonal load pockets based on their location.[12] Resources that are not assigned to a particular sub-zonal load pocket remain in the general Zone J category. Tables 5 and 6 provide EDRP and ICAP/SCR Resources and MW enrolled in the TDRP by sub-zonal load pocket.

[11] The Resource will remain in the EDRP until it clears in a subsequent auction, or the Resource confirms a bilateral transaction with an LSE. The EDRP enrollment totals and event response data included in this report include the offered, but unsold, MW of enrolled ICAP/SCR Resources.

[12] The Load Zone J sub-load pockets are: J1 – Sherman Creek/Parkchester/E 179th; J2 – Astoria West/Queensbridge; J3 – Vernon/Greenwood; J4 – Staten Island; J5 – Astoria East/Corona/Jamaica; J6 – W 49th; J7 – East 13th/East River; J8 – Farragut/Rainey; and J9 – Shared sub-load pocket.

Table 5: EDRP Resources Enrolled in TDRP

Zone/Subzone	J	J1	J2	J3	J4	J5	J6	J7	J8	J9	Total
MW	0.0	0.2	1.4	1.5	0.0	0.2	2.2	2.4	3.6	0.0	11.5
No. of Resources	0	20	109	83	*	15	78	131	257	0	694

*Entries in this category have been masked for confidentiality in this table.

Table 6: ICAP/SCR Resources Enrolled in TDRP

Zone/Subzone	J	J1	J2	J3	J4	J5	J6	J7	J8	J9	Total
MW	1.1	32.5	32.3	65.8	25.7	37.2	82.0	57.6	108.3	0.0	442.5
No. of Resources	69	600	247	1040	328	632	391	481	1624	0	5412

*Entries in this category have been masked for confidentiality in this table.

Analysis of ICAP/SCR Strike Prices

Starting in 2003, Resources participating in the ICAP/SCR program were required to provide a curtailment strike price – between $0 and $500/MWh – to the NYISO at the time of enrollment. Strike Prices are used by the NYISO in the calculation of Energy payments.

The NYISO has analyzed strike price curves for all Resources enrolled as of July 2023 and compared the most recent strike price curves to prior years. Figures 4 and 5 below map the percentage of enrolled ICAP/SCR MW at a given strike price. Figure 4 illustrates the strike price curves for the period 2003 to 2023, the entire period in which Resources were required to provide strike prices. The steep slope of the strike price curves indicate that strike prices are clustered close to the offer ceiling of $500/MWh. The data indicates that, as the program has evolved since 2003, the number of Resources providing strike prices at or near $500/MWh has increased, remaining relatively consistent at approximately 93.5% of enrolled ICAP/SCR MW submitting a strike price at the $500/MWh limit since 2017, with 94% of enrolled ICAP/SCR MW submitting a strike price at the $500/MWh limit in 2023 and the remaining 6% submitting a strike price of $499.99/MWh.

Figure 4: ICAP/SCR Curtailment Strike Price Bid Curves, 2003-2023

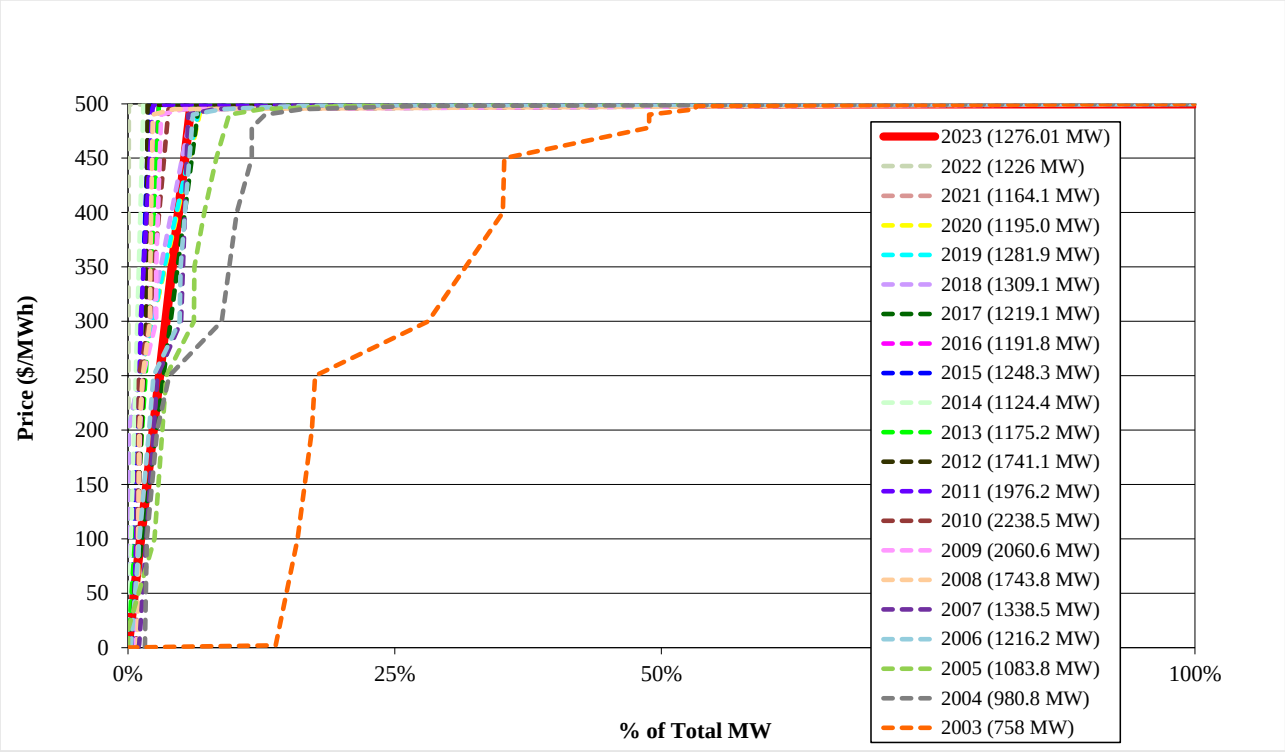
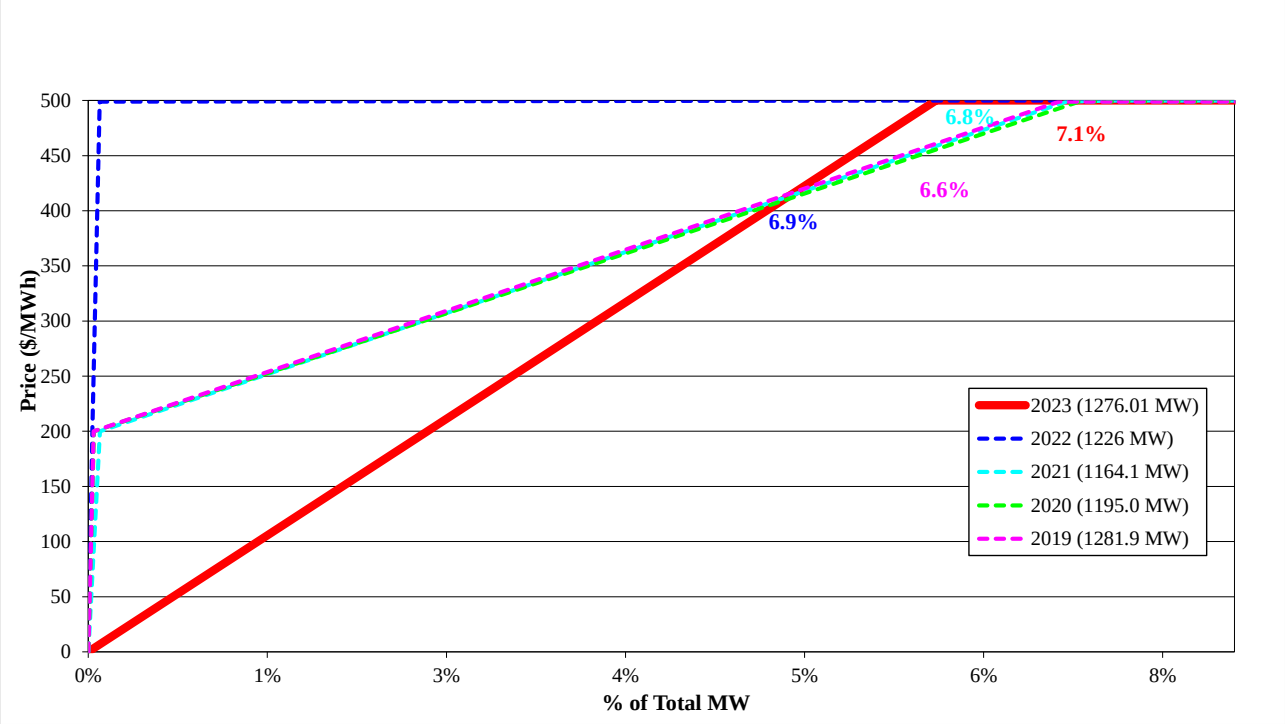


Figure 5 provides a detailed view of the strike price curves for 2018 through 2023, and shows the percentage of offers made below the $500/MWh ceiling.

Figure 5: ICAP/SCR Curtailment Strike Price Bid Curves, 2019-2023



IV. 2023 Event and Test Performance: EDRP and ICAP/SCR Program

NYISO did not activate the EDRP and ICAP/SCR program for events during the Summer 2023 or Winter 2022-23 Capability Periods. The TDRP was activated once in response to Transmission Owner requests during the Summer 2023 Capability Period. The NYISO also conducted two SCR performance tests in Winter 2022-2023 Capability Period and two SCR performance tests in Summer 2023 Capability Period.

Table 7 below provides the date, time, and zone for each performance test and activation conducted during the Winter 2022-2023 and Summer 2023 Capability Periods.

Table 7: ICAP/SCR Performance Tests

Capability Period	Deployment Type	Program	Event/Test Start Time	Event/Test End Time	Zones
Winter 2022-2023	Second Performance Test	SCR	4/19/2023 16:00	4/19/2023 17:00	A, H, I, J
Winter 2022-2023	First Performance Test	SCR	3/1/2023 16:00	3/1/2023 17:00	D
Winter 2022-2023	First Performance Test	SCR	2/22/2023 18:00	2/22/2023 19:00	A, B, C
Winter 2022-2023	First Performance Test	SCR	2/22/2023 17:00	2/22/2023 18:00	J, K
Winter 2022-2023	First Performance Test	SCR	2/22/2023 16:00	2/22/2023 17:00	E, F, G, H, I
Summer 2023	Second Performance Test	SCR	10/4/2023 13:00	10/4/2023 14:00	A, H, I, J
Summer 2023	First Performance Test	SCR	8/30/2023 16:00	8/30/2023 17:00	F, G, H, I, K
Summer 2023	First Performance Test	SCR	8/30/2023 15:00	8/30/2023 16:00	C, D, E
Summer 2023	First Performance Test	SCR	8/30/2023 14:00	8/30/2023 15:00	J
Summer 2023	First Performance Test	SCR	8/30/2023 13:00	8/30/2023 14:00	A, B
Summer 2023	TDRP Event	EDRP	8/21/2023 13:00	8/21/2023 19:00	J3
Summer 2023	TDRP Event	SCR	8/21/2023 13:00	8/21/2023 19:00	J3

a. Test Performance

Each Resource participating in the ICAP/SCR program is required to demonstrate its ability to meet its obligated MW once in each Capability Period. The NYISO therefore schedules a one-hour performance test in which all SCRs are called to demonstrate their ability (the "First Performance Test"). RIPs have the option to use a SCR's performance in a mandatory event as a proxy for its test value in certain circumstances; otherwise, participation in the First Performance Test is mandatory. The NYISO also schedules a Second Performance Test for Resources that change certain operational characteristics within a Capability Period (*e.g.*, a Change of Load).

Measurement of performance test response is based on the ICAP/SCR reporting rules contained in the NYISO's ICAP Manual.

For SCRs that meet their Load reduction obligation solely through curtailment or through a combination of curtailment and the use of a Local Generator, ICAP/SCR response is determined by comparing the actual hourly interval metered load with the Average Coincident Load ("ACL"):

$$ICE\_RED\_MW_{gn} = (ACL_{gm} - METER\_MW_{gn}) * (1+TLF_{gm})$$

Load reduction response for SCRs that meet their Load reduction obligation solely through the use of a Local Generator is determined by the actual hourly interval metered load:

$$ICE\_RED\_MW_{gn} = METER\_MW_{gn} * (1+TLF_{gm})$$

where:

- $ICE\_RED\_MW_{gn}$ is the Installed Capacity Equivalent of Response MW that Resource *g* supplies during hour *n* of an SCR event or test;
- ACL_{gm} is the ACL for Resource *g* applicable to month *m*, using data submitted in its Special Case Resource certification;
- $METER\_MW_{gn}$ is the metered hourly-integrated load for Resource *g* in hour *n* of an SCR event or test; and
- TLF_{gm} is the Transmission Loss Factor for Resource *g* applicable to month *m*, using data submitted in its Special Case Resource certification

The Resource's Installed Capacity Equivalent response is then compared with the Resource's Installed Capacity Equivalent of the maximum registered megawatt value to determine the Resource's performance.

Tables 8 and 9 provide a summary of ICAP/SCR program performance test response compared to the Obligated MW for the zones deployed during the tests; Table 8 summarizes response on a NYCA-wide basis, and Table 9 summarizes response by Zone. Obligated MW is defined as the Installed Capacity Equivalent of the maximum registered MW value that each SCR is required to demonstrate once in every Capability Period. ICAP Equivalent of Response MW, reported for each Capability Period, includes MW responses for both First and Second Performance Tests if data is available. For Resources that are required to demonstrate performance in both the First and Second Performance Tests, the maximum MW response is reported.[13]

[13] If Verified ACL data is not available at the time of reporting for a Resource enrolled with either a Provisional ACL or an Incremental ACL, the ACL with which the Resource enrolled in the SCR program is used for reporting performance data.

Table 8: Summary of ICAP/SCR Program Performance Test MW Response Based on ACL Baseline - NYCA-Wide

Program	Capability Period	Zone	ICAP Equivalent of Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW
SCR (ICAP)	Winter (2022-2023)	A,B,C,D,E,F,G,H,I,J,K	919.1	835.0	110.1%
SCR (ICAP)	Summer (2023)	A,B,C,D,E,F,G,H,I,J,K	1599.9	1332.9	120.0%

Table 9: ICAP/SCR Program Performance Test MW Response Based on ACL Baseline – By Zone

Program	Capability Period	Zone	ICAP Equivalent of Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW
SCR (ICAP)	Winter (2022-2023)	A	228.9	178.2	128.4%
		B	19.1	19.0	100.9%
		C	64.0	63.1	101.4%
		D	211.2	207.5	101.8%
		E	15.8	17.9	88.4%
		F	62.8	56.0	112.1%
		G	21.1	24.8	85.1%
		H	9.4	8.8	106.0%
		I	18.7	18.4	101.8%
		J	252.0	224.4	112.3%
		K	16.1	16.9	95.4%
		Total	919.1	835.0	110.1%

Program	Capability Period	Zone	ICAP Equivalent of Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW
SCR (ICAP)	Summer (2023)	A	284.6	282.8	100.6%
		B	36.9	29.6	124.6%
		C	108.2	80.4	134.6%
		D	228.8	227.4	100.6%
		E	32.3	31.1	103.8%
		F	151.3	143.4	105.5%
		G	43.1	42.0	102.5%
		H	12.0	11.8	101.4%
		I	48.2	35.0	137.7%
		J	607.8	413.3	147.0%
		K	46.8	36.0	130.0%
		Total	1599.9	1332.9	120.0%

In addition to receiving a capacity payment for committing to reduce energy consumption, RIPs with Resources enrolled in the ICAP/SCR program are eligible to receive Energy payments for reductions made by those Resources during a performance test or event, provided that the RIP submits the required performance data. The amount of load reduction eligible for an Energy payment is computed using a Customer Baseline Load ("CBL"). Unlike the ACL baseline which uses a SCR's Load data from a prior like Capability Period, the CBL uses data from the previous 30 days to establish a baseline which is likely to be a more accurate representation of the Resource's Load during a performance test or event but for the Resource's response to the NYISO's deployment directive. The Energy payment is the difference between the hourly CBL and the corresponding interval meter readings during performance test hours, multiplied by the applicable LBMP.

Table 10 presents a summary of voluntarily reported CBL data by zone and hour for ICAP/SCR Resources for the Winter 2022-2023 and Summer 2023 Capability Period performance tests. The information reported in Table 10 only includes the CBL performance during the performance test that is used for Energy payments. Since the ICAP/SCR ACL values described above are based on the prior like Capability Period, and the CBL is determined from data up to 30 days prior to performing the tests, the NYISO expects different Resource response rates. Contributing to the difference between the ICAP/SCR ACL response and the CBL response is the fact that not all RIPs submit CBL energy performance data. The NYISO has observed that some RIPs report CBL data only for their larger Resources, and they are more likely to report CBL data for Resources in Load Zone J, where energy prices are typically higher than in the rest of the NYCA.

Table 10: ICAP/SCR Program Performance Test MW Response Based on CBL Baseline

Program	Capability Period	Zone	ICAP Equivalent of Response MW	Obligated ICAP MW of SCRs Reporting CBL Data	% Response of Obligated ICAP MW
SCR (ICAP)	Winter (2022-2023)	A	182.2	174.8	104.2%
		B	14.0	18.2	77.3%
		C	51.3	56.4	91.0%
		D	65.9	67.0	98.3%
		E	6.5	8.5	75.9%
		F	67.7	53.8	125.9%
		G	18.8	23.2	81.1%
		H	7.5	8.4	89.3%
		I	12.7	16.1	78.9%
		J	154.3	184.1	83.8%
		K	6.8	7.8	88.0%
		Total	587.7	618.2	95.1%

Program	Capability Period	Zone	ICAP Equivalent of Response MW	Obligated ICAP MW of SCRs Reporting CBL Data	% Response of Obligated ICAP MW
SCR (ICAP)	Summer (2023)	A	286.1	272.5	105.0%
		B	24.6	27.5	89.4%
		C	71.7	76.7	93.5%
		D	229.4	226.9	101.1%
		E	27.2	30.1	90.3%
		F	97.1	120.2	80.8%
		G	30.4	39.0	77.9%
		H	8.1	9.4	86.4%
		I	26.6	31.2	85.5%
		J	283.9	335.3	84.7%
		K	20.2	23.8	84.8%
		Total	1105.3	1192.5	92.7%

b. Event Performance

In 2023 the NYISO activated TDRP once in response to Transmission Owner requests:

- On August 21st, 2023, SCR and EDRP Resources were deployed in sub-load pocket J3 from 1 pm to 7 pm.

Table 11 summarizes SCR and EDRP response based on ACL and CBL, respectively, for all 2023 Summer Capability Period events. Obligated MW is defined as the Installed Capacity Equivalent of the UCAP sold by SCRs in a Load Zone during the calendar month in which the event occurred. When the amount of Obligated MW differs from enrolled MW, it indicates that a portion of a Load Zone's enrolled SCR UCAP went unsold for the month of the event. As explained in Section III, SCRs enrolled during a particular month in a Capability Period that did not sell UCAP are treated as EDRP Resources for that particular month. Available EDRP MW is defined as the amount of demand response reduction nominated by the EDRP Resources in a Load Zone.

Table 12 presents a summary of reported CBL data by zone and hour for ICAP/SCR Resources during the Summer 2023 Capability Period. Since the ICAP/SCR ACL values described above are based on the prior like Capability Period, and the CBL is determined from data that ranges up to 30 days prior to the event, the NYISO expects different Resource response rates. To provide an accurate comparison and see the difference between the CBL and ACL baselines, the same set of Resources were used in both tables, meaning Resources that were responding for performance only were excluded from Table 11.

Table 11: Summary of 2023 Event Performance using ACL for SCRs and CBL for EDRP Resources

					SCR (using ACL as baseline)			EDRP (using CBL as baseline)			Reliability Program-wide		
Deployment Type	Event Day	Event Start Time	Event End Time	Zone	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW	Average Hourly Response MW	Available EDRP MW	% Response of Available EDRP MW	Total Response MW	Obligated ICAP MW and Available EDRP MW	% Response of Obligated ICAP MW and Available EDRP MW
TDRP Event	8/21/2023	8/21/2023 13:00	8/21/2023 19:00	J3	15.1	65.9	23.0%	0.4	1.5	26.4%	15.5	67.4	23.1%

NOTE: EDRP Resource performance is calculated using the CBL baseline only. The data presented in Tables 11 and 12, therefore, contains the same information for EDRP Resources.

Table 12: Summary of 2023 Event Performance using CBL for SCRs and EDRP Resources

					SCR (using CBL as baseline)				EDRP (using CBL as baseline)				Reliability Program-wide			
Deployment Type	Event Day	Event Start Time	Event End Time	Zone	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW of SCRs Reporting CBL Data	% Response of Obligated ICAP MW	Total Payment	Average Hourly Response MW	Available EDRP MW	% Response of Available EDRP MW	Total Payment	Total Response MW	Obligated ICAP MW and Available EDRP MW	% Response of Obligated ICAP MW and Available EDRP MW	Total Payment
TDRP Event	8/21/2023	8/21/2023 13:00	8/21/2023 19:00	J3	5.5	11.8	46.9%	$15,876.60	0.4024	1.523	26.4%	$1,207.20	5.940149932	13.339	0.445321983	17083.8

V. Economic Demand Response Programs

Day-Ahead Demand Response Program

There have been no offers submitted for DADRP Resources since December 2010. There is, therefore, nothing to report for this period.

Demand Side Ancillary Services Program

Because there is limited participation in the DSASP, detailed information on the program is not provided in this report.

VI. Updates on 2023 Demand Response Initiatives

This section provides an update on the status of initiatives that the NYISO has been working on with its stakeholders to improve the administration of its demand response programs and to address regulatory directives to facilitate market participation. In particular, the NYISO has focused on:

- Developing and initiating the transition of DSASP and DADRP Resources to the Distributed Energy Resource participation model;
- Enhancing Demand Response in the Real-Time Energy market by working toward implementation of the Distributed Energy Resource participation model;
- FERC Order No. 2222 Compliance;

Distributed Energy Resource Participation Model

Consistent with market rules proposed by the NYISO in Docket No. ER19-2276-000, *et al.*, and accepted by the Federal Energy Regulatory Commission ("Commission") on January 23, 2020, the NYISO will retire both the Demand Side Ancillary Services Program ("DSASP") and the Day-Ahead Demand Response Program ("DADRP") when the applicable Resources become eligible to utilize the Distributed Energy Resource ("DER") and Aggregation market rules.[14] In preparation for the retirement of the DSASP and DADRP, the NYISO will stop accepting DSASP and DADRP Resource applications once the DER participation model is available. The NYISO is committed to providing a smooth transition of DSASP and DADRP Providers and their Resources in the NYISO markets once the DER model is available, however DSASP and DADRP Resources will ultimately

[14] *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. ER19-2276-000 (Jun. 27, 2019).

be required to transition to the DER Participation Model or withdraw from the market. Effective upon the deployment date of the DER participation model, the NYISO will maintain an approximately 12-month transition period during which all DSASP and DADRP Resources intending to transition to DER participation may continue DSASP and DADRP participation.

Enhancing Demand Response in the Real-Time Energy Market by Developing a Distributed Energy Resource Participation Model

The NYISO initiated a project in 2016 to integrate Distributed Energy Resources (DER), including demand response, into its real-time Energy markets. The primary outcome of this initiative will be the integration of dispatchable DER in the NYISO's Energy, Ancillary Service and Capacity markets.[15] In 2017 the NYISO published a DER Roadmap[16] describing NYISO's vision for integrating these Resources into the wholesale markets and proposed a market design concept to its stakeholders.[17] In 2018, the NYISO worked with its stakeholders to develop a detailed market design to facilitate dispatchable DER integration. The NYISO made a total of 31 stakeholder presentations[18] to its Market Issues and Installed Capacity working groups to discuss the market design details related to DER aggregations, energy and ancillary services market participation, capacity market participation, interconnection, meter data constructs, and dual participation. In 2019, the NYISO obtained stakeholder approval of the DER participation model market design at the Business Issues Committee and Management Committee, and submitted the proposed tariff revisions to the FERC in June 2019. The FERC accepted the proposed tariff changes on January 23, 2020. The NYISO is ready to implement the DER and Aggregation participation model, and is awaiting a FERC decision on DER and Aggregation participation model enhancements that were proposed in June 2023.

[15] The NYISO's initiative to integrate DER will also include market rules for participation in the NYISO's capacity and ancillary services markets.

[16] New York Indep. Sys. Operator, Inc., *Distributed Energy Resources Roadmap for New York's Wholesale Electricity Markets* (Feb. 2017), *available at* https://www.nyiso.com/documents/20142/1391862/Distributed_Energy_Resources_Roadmap.pdf.

[17] New York Indep. Sys. Operator, Inc., *Distributed Resources Market Design Concept Proposal* (Dec. 2017), *available at* https://www.nyiso.com/documents/20142/1391862/Distributed-Energy-Resources-2017-Market-Design-Concept-Proposal.pdf

[18] The NYISO's DER integration related presentations are available at: https://www.nyiso.com/search?keytopics=Distributed%20Energy%20Resources%20Participation%20Model&sortField=newest

FERC Order No. 2222 Compliance

The NYISO filed its Order No. 2222 compliance filing on July 19, 2021.[19] The Commission issued an Order approving the NYISO's compliance filing, subject to additional compliance requirements, on June 17, 2022.[20] The NYISO submitted its second compliance filing on November 14, 2022 addressing the directives of the June 17, 2022 Order.[21] The Commission issued an Order approving the NYISO's compliance filing, subject to additional compliance requirements, on April 20, 2023.[22] The NYISO submitted another compliance filing on May 22, 2023 addressing the directives of the April 20, 2023 Order.[23] The Commission Issued an Order on July 21, 2023 approving the NYISO's compliance filing and directing the NYISO to file an effective date notice.[24]

VII. 2024 Demand Response Initiatives

This section provides an overview of the projects that the NYISO has planned for its demand response programs for 2024.

Continued Development of the Demand Response Information System ("DRIS")

The NYISO plans to continue updating its DRIS software as necessary to improve user experience.

Demand Response in the Real-Time Energy Market via the Distributed Energy Resources Participation Model

The integration of DER into the NYISO's markets will continue to be the main driver in demand response innovation for 2024. The NYISO is ready to implement its market design in 2024, subject to FERC acceptance. The DER participation model will offer Demand Side Resources a single, streamlined, participation model under which they may offer all the wholesale market services they are technically capable of providing, enhancing wholesale market participation opportunities.

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

[20] *New York Indep. Sys. Operator, Inc.*, Order on Compliance Filing, 179 FERC ¶ 61,198 (Jun. 17, 2022).

[21] *New York Indep. Sys. Operator, Inc.*, Compliance Filing, Docket No. ER21-2460-003 (Nov. 14, 2022).

[22] *New York Indep. Sys. Operator, Inc.*, Order on Compliance Filing, 183 FERC ¶ 61,035 (Apr. 20, 2023).

[23] *New York Indep. Sys. Operator, Inc.*, Compliance Filing, Docket No. ER21-2460-005 (May 22, 2023).

[24] *New York Indep. Sys. Operator, Inc*., Order on Compliance Filing, Docket No. ER21-2460-005 (Jul. 21, 2023) (unpublished letter order).

FERC Order No. 2222 Compliance

FERC approval has been received on the NYISO's Order 2222 compliance, subject to a compliance obligation related to the ability of heterogeneous Aggregations to provide Operating Reserves.. The NYISO is developing tariff language to satisfy its Order 2222 compliance filing obligation with FERC, which rules will be submitted by the end of 2024. The NYISO's compliance filing will address the provision of Ancillary Services by Aggregations containing DER of heterogenous technical capabilities. The NYISO's revised market design will enable an Aggregation of heterogenous DER, with differing individual capabilities, to provide the services they are qualified to provide in an Aggregation, within the bounds of NYISO's software capabilities and consistent with applicable reliability standards.

The NYISO is beginning work to gather requirements for Order No. 2222 software development, and is targeting a 2026 implementation of software and procedures necessary to comply with Order 2222.

Appendix A: Detailed Event Response for Summer 2023 Demand Response Events

This Appendix A includes additional data on event response for the TDRP activation. The following tables are presented for the event:

- Event Summary – average hourly response compared to Obligated or Available MW by program and event energy payments by program.
- SCR MW Response Based on ACL – hourly response detail by zone and average hourly response compared to Obligated MW for the zone.
- SCR Energy Response Based on CBL – response detail by zone and average hourly response compared to Obligated MW of SCRs that reported CBL data in the zone.
- SCR Energy Payments – hourly energy payments, daily BPCG payments by zone for SCRs that reported CBL data.
- Energy Response of EDRP Resources and SCRs treated as EDRP – detailed hourly response by zone, average hourly response, and comparison of average hourly response to enrolled (also referred to as Available) MW.
- Energy Payments to EDRP Resources and SCRs treated as EDRP – hourly and total event energy payments by zone.

TDRP Activations

August 21, 2023: SCR and EDRP Response was voluntary for all deployed zones/sub-load pockets[25]

Table A-1: Event Summary – August 21, 2023

	Zone	ICAP Equivalent of Average Hourly Response MW or Average Hourly Response MW	Obligated ICAP MW or Available EDRP MW	% Response of Obligated ICAP MW or Available EDRP MW	Total Payment
SCR (ICAP)	J	15.1	65.9	23.0%	$ 15,876.6
EDRP and SCRs treated as EDRP	J	0.4	1.5	26.4%	$ 1,207.2
Total		15.5	67.4	23.1%	$ 17,083.8

Table A-2: SCR MW Response Based on ACL – August 21, 2023

Zone	HB 13	HB 14	HB 15	HB 16	HB 17	HB 18	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW
J3	12.1	13.3	14.0	14.8	16.4	20.2	15.1	65.9	23.0%
Total	12.1	13.3	14.0	14.8	16.4	20.2	15.1	65.9	23.0%

Table A-3: SCR MW Response Based on CBL – August 21, 2023

Zone	HB 13	HB 14	HB 15	HB 16	HB 17	HB 18	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW of SCRs Reporting CBL Data	% Response of Obligated ICAP MW
J3	4.7	6.0	6.2	6.6	5.9	3.8	5.5	11.8	46.9%
Total	4.7	6.0	6.2	6.6	5.9	3.8	5.5	11.8	46.9%

Table A-4: SCR Energy Payments – August 21, 2023

	HB 13	HB 14	HB 15	HB 16	HB 17	HB 18	Sum of LBMP Payments	Sum of BPCG Payments	Total Payments
	$ 135.4	$ 225.3	$ 262.5	$ 265.1	$ 261.7	$ 237.7	$ 1,387.7	$14,488.9	$ 15,876.6
	$ 135.4	$ 225.3	$ 262.5	$ 265.1	$ 261.7	$ 237.7	$ 1,387.7	$14,488.9	$ 15,876.6

[25] The data shown in tables A-1 though A-6 are using the same set of Resources to provide an accurate comparison between the ACL and CBL baselines. Resources that responded as performance only were not included in this data.

Table A-5: Energy Response of EDRP Resources and SCRs treated as EDRP – August 21, 2023

Zone	HB 13	HB 14	HB 15	HB 16	HB 17	HB 18	Average Hourly Response MW	Available EDRP MW	% Response of Available MW
J3	0.2	0.4	0.2	0.6	0.6	0.4	0.4	1.5	26.4%
Total	0.2	0.4	0.2	0.6	0.6	0.4	0.4	1.5	26.4%

Table A-6: Energy Payments to EDRP Resources and SCRs treated as EDRP – August 21, 2023

Zone	HB 13	HB 14	HB 15	HB 16	HB 17	HB 18	Sum of LBMP Payments
J3	$ 82.1	$ 210.9	$ 82.1	$ 307.2	$ 311.2	$ 213.9	$ 1,207.2
Total	$ 82.1	$ 210.9	$ 82.1	$ 307.2	$ 311.2	$ 213.9	$ 1,207.2