

# NYISO 2022 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”)<sup>1</sup> 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.<sup>2</sup> Load curtailment by EDRP resources during NYISO-called events is voluntary.

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<sup>1</sup> Capitalized terms not defined herein have the meaning ascribed to them in the NYISO’s Market Administration and Control Area Services Tariff (“Services Tariff”).

<sup>2</sup> 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.<sup>3</sup> 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 program 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

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<sup>3</sup> 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.<sup>4</sup>

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.

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

## II. 2022 Program Summary

### EDRP and ICAP/SCR Program

As of July 31, 2022, a total of 29 CSPs and RIPs had eligible resources enrolled in the NYISO's EDRP and ICAP/SCR program.<sup>5</sup> Participating CSPs and RIPs include:<sup>6</sup>

- 1 Transmission Owner (“TO”);
- 14 Competitive Load Serving Entities (“LSEs”) that are not TOs; and
- 14 Aggregators that are not an LSE or TO.

These figures represent a net increase of three CSP/RIPs from 2021. This was a result of an increase of one Aggregator and two competitive Load Serving Entities.

As of July 31, 2022, a total of 4,630 end-use locations were enrolled in the NYISO's EDRP and ICAP/SCR programs. These locations were capable of providing a total of 1,234.4 MW of demand response. This corresponded to a 5.5% increase in the enrolled MW versus 2021, and represents 4.04% of the 2022 Summer Capability Period peak demand of 30,505 MW. Of the 4,630 end-use locations, 522 participated in the EDRP program, 60 were ICAP/SCR resources with unsold capacity,<sup>7</sup> and the remaining 4,048 end-use locations participated in the NYISO's ICAP/SCR program. The ICAP/SCR program represents 88.7% of the total resources enrolled in the NYISO's reliability-based demand response programs and 99.7% of the total MW enrolled in those programs.

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<sup>5</sup> 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, 2022.

<sup>6</sup> 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.

<sup>7</sup> ICAP/SCR Resources with unsold capacity are those resources that did not sell their full available capacity.

Aggregators and competitive LSEs currently represent 96.5% of enrolled MW in EDRP and ICAP/SCR, up from 96.2% of enrolled MW in 2021. The remaining 3.5% 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 84.3% of the total New York Control Area (“NYCA”) EDRP end-use locations and 91.2% of total NYCA EDRP MW. The TDRP also includes 70.4% of total NYCA ICAP/SCR end-use locations, representing 34.4% 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 2021 Report.

#### Demand-Side Ancillary Services Program

There are eight Demand Side Resources actively participating in the DSASP as providers of Operating Reserves. These resources represent 248.9 MW of capability and had an average performance of 131.6% during the analysis period of May 2022 through December 2022<sup>8</sup>.

### **III. Reliability Program Participation Detail**

#### Historical Enrollment Data

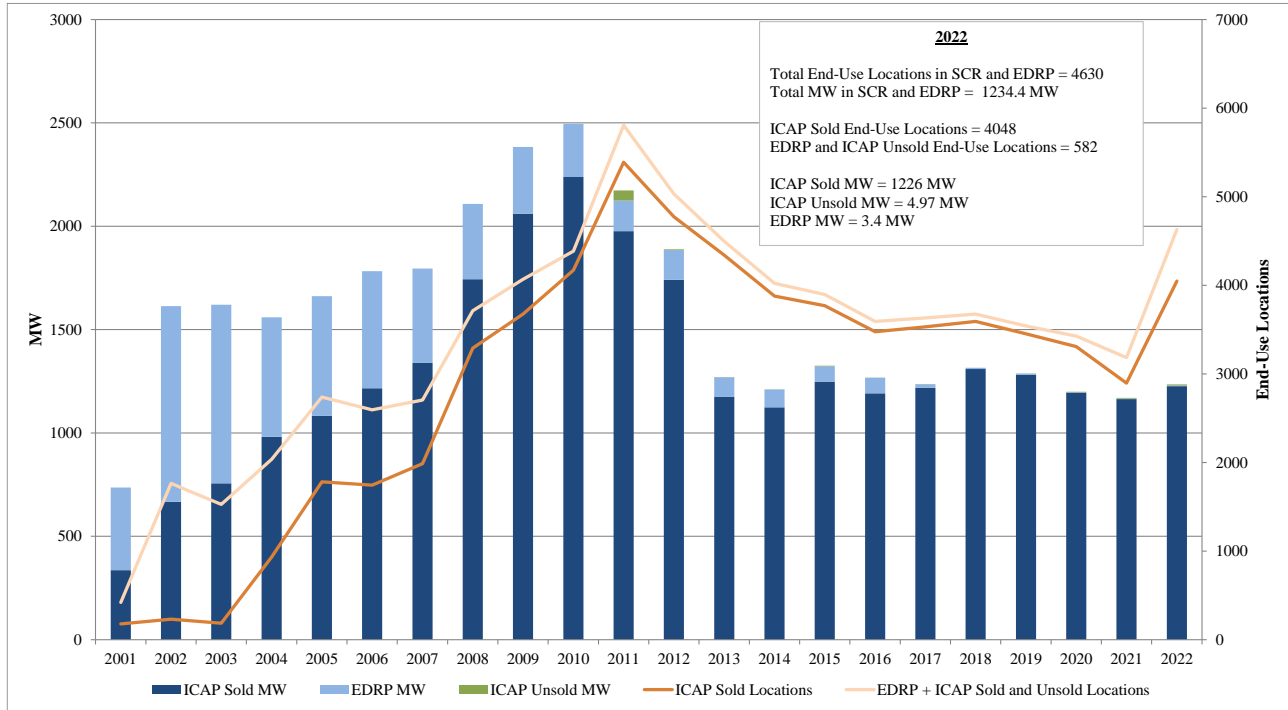
Historical enrollment data for the NYISO’s reliability demand response programs is presented in Figure 1. The figure plots the enrollment in the NYISO’s reliability-based programs from inception through July 2022. The stacked bar charts plot enrolled MW by program and year, and the lines plot the number of end-use locations by program and year.

From May 2001 through July 2022, combined enrollment in EDRP and ICAP/SCR has grown from approximately 200 MW to 1234.4 MW. The total number of end-use locations has increased from approximately 200 in March 2001 to 4,630 in July 2022.

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<sup>8</sup> The Demand Side Ancillary Services Program (“DSASP”) does not operate through a monthly enrollment model. Specific to 2022, the program experienced increased participation after the normal reporting period of July 2022. Therefore, the NYISO deemed it appropriate to extend the reporting period for this program through December 2022.

**Figure 1: Historical Enrollment of End-Use Locations and MW in NYISO Reliability Programs**



Changes in Program Enrollment – 2021-2022

Enrollment data for the NYISO’s reliability-based demand response programs for 2021 - 2022 is provided in Table 1. The number of ICAP/SCR end-use locations and the enrolled MW have increased since the 2021 report. The number of EDRP end-use locations and the enrolled MW have increased over the past year.

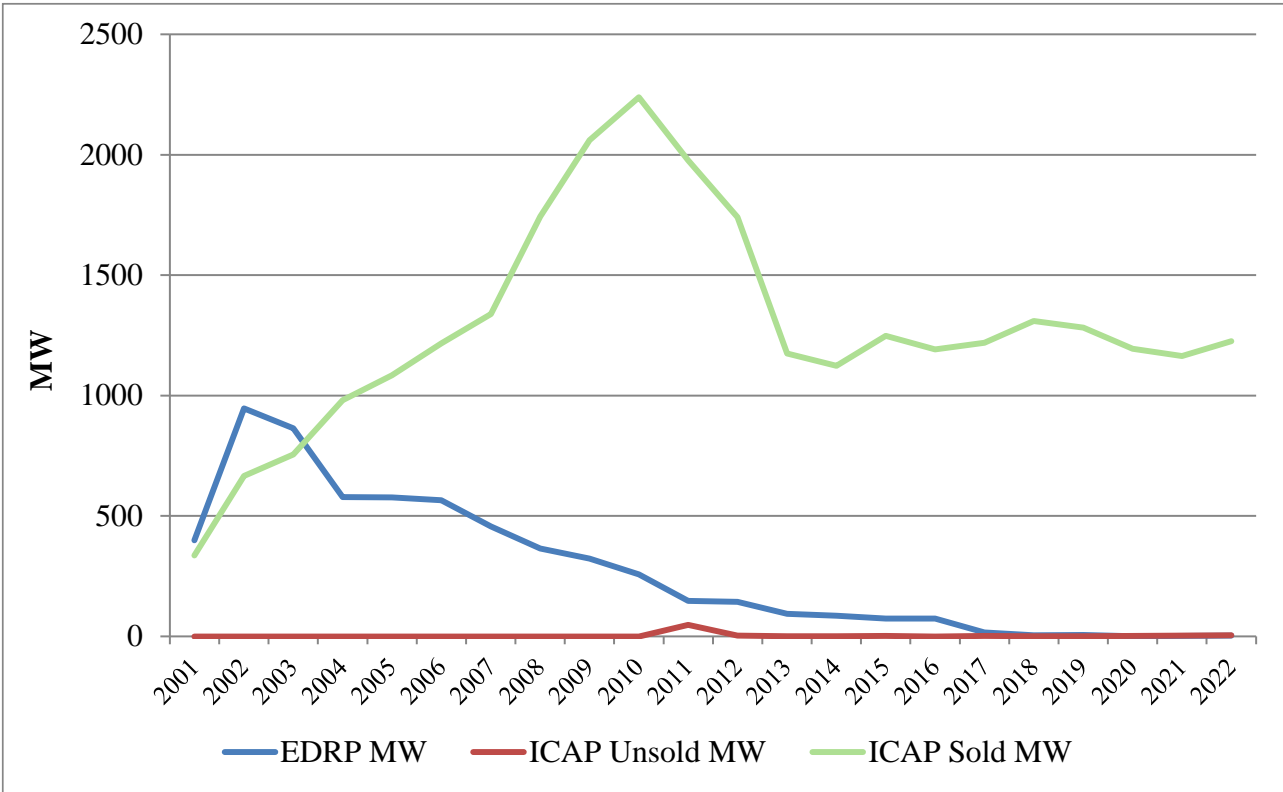
**Table 1: Program Enrollment by End-Use Location – 2021-2022**

	2022		2021		MW Change	Percent Change From 2021 to 2022		MW per End-use Location		
	Count	MW	Count	MW		End-Use Location Count	Enrolled MW	2022	2021	Percent Change
EDRP	522	3.4	262	2.0	1.4	99.2%	71.8%	0.01	0.01	-13.8%
ICAP Unsold	60	4.97	26	3.70	1.3	130.8%	34.2%	0.08	0.14	-41.8%
ICAP Sold	4048	1226.0	2896	1164.1	61.9	39.8%	5.3%	0.30	0.40	-24.7%

Figures 2 and 3 present enrollment statistics in the EDRP and ICAP/SCR program from 2001 – 2022. Figure 2 presents the data by MW enrolled, while Figure 3 presents the data by

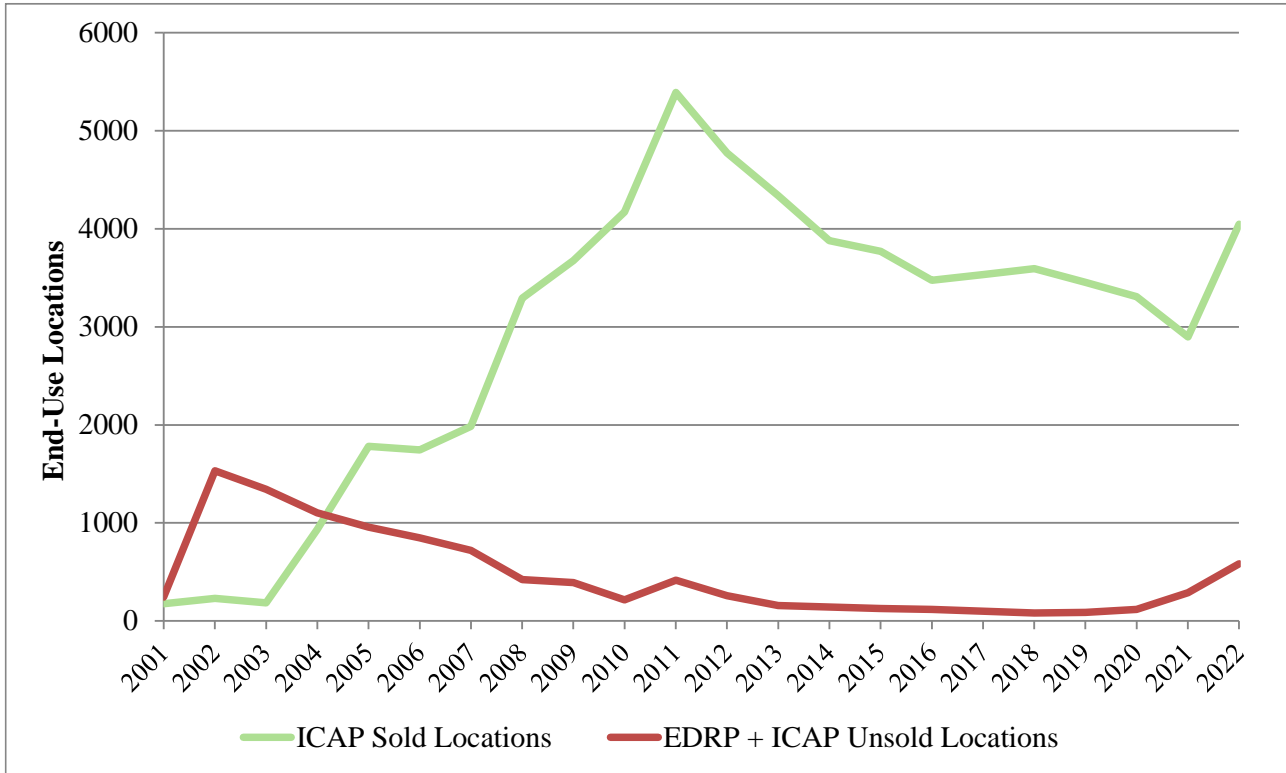
number of end-use locations.<sup>9</sup> Since making the EDRP and ICAP/SCR program mutually exclusive, there has been a general decline in the number of enrolled MW and resources in the EDRP. There was a increase to ICAP Sold end-use locations in 2022; however, most of the new end-use locations were 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, 2001-2022**



<sup>9</sup> ICAP/SCR program enrollment of individual end-use locations began in 2004. In 2001 and 2002 end-use locations 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 End-Use Location, 2001-2022**



2021-2022 EDRP and ICAP/SCR Program Enrollments

At the end of July 2022, 4,630 end-use locations, with a total of 1,234.4 MW of demand response capability, were enrolled in NYISO’s EDRP and ICAP/SCR program. This represents a 5.5% increase from the total enrolled demand response capability in 2021. Of the 4,630 end-use locations, 522 were enrolled in the EDRP and 4,108 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 88.7% of the total reliability program end-use locations and 99.7% of the total reliability program MW. Table 2, below, provides summary data for the EDRP and ICAP/SCR program.



**Table 2: 2022 Program Enrollment Summary by CSP and RIP Type**

No. of Unique MPs	Agent Type	EDRP			ICAP Unsold			ICAP Sold		
		No. of CSPs	No. of End-Use Locations	MW	No. of RIPs	No. of End-Use Locations	MW	No. of RIPs	No. of End-Use Locations	MW
14	Aggregator	0	0	0.0	*	35	4.6	12	2748	1142.5
0	Direct Customer	0	0	0.0	0	0	0.0	0	0	0.0
14	Competitive Load Serving Entity	*	522	3.4	*	25	0.3	13	1298	40.3
1	Transmission Owner/LSE	0	0	0.0	0	0	0.0	*	*	43.2
29	Total	*	522	3.4	6	60	5.0	26	4048	1226.0

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

2022 SCR enrollments were primarily provided through non-TOs representing 99.9% of participating end-use locations and 96.5% of the enrolled MW. Similarly, for 2022 EDRP enrollments and ICAP/SCR resources with unsold capacity, non-TOs represented 100% of participating end-use locations 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: 2022 Program Enrollment by Load Zone**

Zone	EDRP		ICAP Unsold		ICAP Sold	
	No. of End-Use Locations	MW	No. of End-Use Locations	MW	No. of End-Use Locations	MW
A	0	0.0	0	0.0	124	209.6
B	0	0.0	0	0.0	99	29.7
C	0	0.0	0	0.0	141	90.1
D	0	0.0	0	0.0	26	217.8
E	0	0.0	*	0.3	66	33.1
F	0	0.0	0	0.0	133	114.2
G	0	0.0	0	0.0	77	36.1
H	6	0.0	22	0.0	27	10.9
I	76	0.3	*	0.0	227	32.2
J	440	3.1	34	4.6	2860	418.6
K	0	0.0	0	0.0	268	33.7
Total	522	3.4	60	5.0	4048	1226.0

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

## ICAP/SCR Resource Aggregations

NYISO identifies ICAP/SCR resource enrollments by end-use location, and they may represent either individually enrolled end-use locations or aggregations of end-use locations that are enrolled as a single demand response resource. Table 4 contains data on ICAP/SCR program participation. As of July 31, 2022, 4,028 end-use locations were enrolled in aggregations. These aggregations provided 1,093.5 MW of the 1,226 MW enrolled in the ICAP/SCR program. The remaining 132.5 MW of demand response capacity in the ICAP/SCR program came from 20 individually enrolled resources.

**Table 4: Detail of 2022 ICAP/SCR Program Participation Level by Resource Type**

Resource Type	ICAP Sold		ICAP Unsold	
	No. of End-Use Locations	MW	No. of End-Use Locations	MW
Individual Resources	20	132.5	*	0.2
Aggregated Resources	4028	1093.5	58	4.8
Total	4048	1226.0	60	5.0

\*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 2022 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.<sup>10</sup>

## 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.<sup>11</sup> Resources that are not assigned to a particular sub-zonal load pocket remain in the general Zone J

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<sup>10</sup> 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.

<sup>11</sup> The Load Zone J sub-load pockets are: J1 – Sherman Creek/Parkchester/E 179<sup>th</sup>; J2 – Astoria West/Queensbridge; J3 – Vernon/Greenwood; J4 – Staten Island; J5 – Astoria East/Corona/Jamaica; J6 – W 49<sup>th</sup>; J7 – East 13<sup>th</sup>/East River; J8 – Farragut/Rainey; and J9 – Shared sub-load pocket.

category. Tables 5 and 6 provide EDRP and ICAP/SCR end-use locations and MW enrolled in the TDRP by sub-zonal load pocket.

**Table 5: EDRP End-Use Locations Enrolled in TDRP**

Zone/Subzone	J	J1	J2	J3	J4	J5	J6	J7	J8	J9	Total
MW	0.0	0.3	0.2	0.6	0.0	0.1	0.5	0.5	0.9	0.0	3.1
No. of End-Use Locations	0	43	28	59	*	11	49	71	178	0	440

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

**Table 6: ICAP/SCR End-Use Locations Enrolled in TDRP**

Zone/Subzone	J	J1	J2	J3	J4	J5	J6	J7	J8	J9	Total
MW	1.0	31.5	30.1	63.6	27.7	33.4	67.9	61.9	106.1	0.0	423.2
No. of End-Use Locations	58	293	165	530	121	298	275	316	838	0	2894

\*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 2022 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 2022, 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% of enrolled ICAP/SCR MW submitting a strike price at the \$500/MWh limit since 2017, with greater than 94.08% of enrolled ICAP/SCR MW submitting a strike price at the \$500/MWh limit in 2022; 5.84% ICAP/SCR MW submitted a strike price of \$499.99/MWh, 0.05% ICAP/SCR MW submitted a strike price of \$499/MWh, and the remaining 0.03% submitted a strike price below \$499/MWh.

**Figure 4: ICAP/SCR Curtailment Strike Price Bid Curves, 2003-2022**

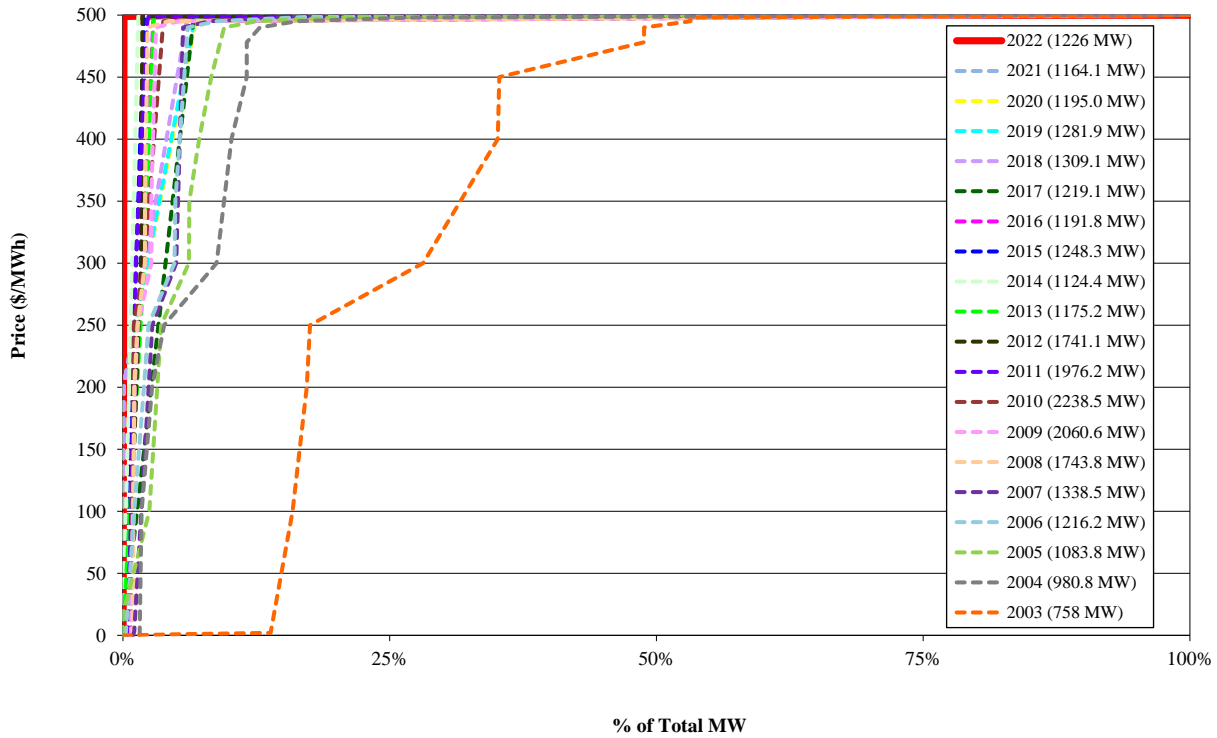
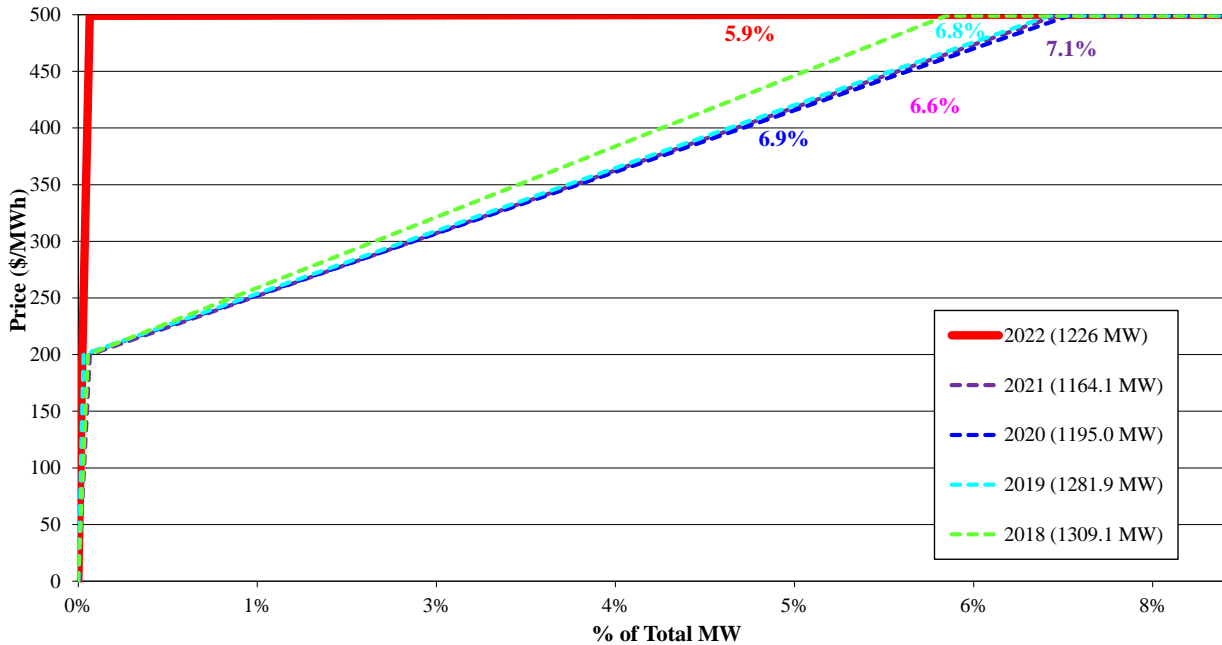


Figure 5 provides a detailed view of the strike price curves for 2018 through 2022, and shows the percentage of offers made below the \$500/MWh ceiling.

**Figure 5: ICAP/SCR Curtailment Strike Price Bid Curves, 2018-2022**



#### IV. 2022 Event and Test Performance: EDRP and ICAP/SCR Program

NYISO activated the EDRP and ICAP/SCR for two events during the Summer 2022 Capability Period. NYISO did not activate the EDRP or ICAP/SCR for events during the Winter 2021-22 Capability Period. The TDRP was not activated during the Summer 2022 or Winter 2021-22 Capability Periods. The NYISO also conducted two SCR performance tests in Winter 2021-2022 Capability Period and two SCR performance tests in Summer 2022 Capability Period.

Table 7 below provides the date, time, and zone for each performance test and activation conducted during the Winter 2021-2022 and Summer 2022 Capability Periods.

**Table 7: ICAP/SCR Performance Tests**

Capability Period	Deployment Type	Program	Event/Test Start Time	Event/Test End Time	Zones
Winter 2021-22	First Performance Test	SCR	2/16/2022 18:00	2/16/2022 19:00	A, B, C
Winter 2021-22	First Performance Test	SCR	2/16/2022 17:00	2/16/2022 18:00	J, K
Winter 2021-22	First Performance Test	SCR	2/16/2022 16:00	2/16/2022 17:00	D, E, F, G, H, I
Winter 2021-22	Second Performance Test	SCR	4/6/2022 16:00	4/6/2022 17:00	D, J
Summer 2022	NYISO Event	SCR	7/19/2022 16:00	7/19/2022 22:00	F
Summer 2022	NYISO Event	EDRP	7/19/2022 16:00	7/19/2022 22:00	F
Summer 2022	NYISO Event	SCR	7/20/2022 15:00	7/20/2022 22:00	F
Summer 2022	NYISO Event	EDRP	7/20/2022 15:00	7/20/2022 22:00	F
Summer 2022	First Performance Test	SCR	8/24/2022 16:00	8/24/2022 17:00	F, G, H, I, K
Summer 2022	First Performance Test	SCR	8/24/2022 15:00	8/24/2022 16:00	C, D, E
Summer 2022	First Performance Test	SCR	8/24/2022 14:00	8/24/2022 15:00	J
Summer 2022	First Performance Test	SCR	8/24/2022 13:00	8/24/2022 14:00	A, B
Summer 2022	Second Performance Test	SCR	10/5/2022 13:00	10/5/2022 14:00	J

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. There were two mandatory Zone F events in the Summer 2022 Capability Period, consolidated in the month of July, therefore participation in the First Performance Test was mandatory for Winter 2021-22, but not mandatory for Summer 2022 for resources in Zone F. 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.<sup>12</sup>

**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 (2021-2022)	A,B,C,D,E,F,G,H,I,J,K	667.0	662.5	100.7%
SCR (ICAP)	Summer (2022)	A,B,C,D,E,F,G,H,I,J,K	1293.5	1192.1	108.5%

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<sup>12</sup> 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 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 (2021-2022)	A	137.6	124.5	110.5%
		B	25.0	19.8	126.3%
		C	60.9	67.3	90.5%
		D	75.3	78.4	96.0%
		E	13.2	15.4	85.5%
		F	82.4	77.1	106.9%
		G	17.6	20.0	88.0%
		H	8.7	8.7	100.4%
		I	16.8	19.7	85.1%
		J	218.4	217.8	100.3%
		K	11.2	13.9	80.4%
		Total		667.0	662.5

Program	Capability Period	Zone	ICAP Equivalent of Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW
SCR (ICAP)	Summer (2022)	A	223.0	219.5	101.6%
		B	27.7	29.8	92.9%
		C	91.1	90.3	101.0%
		D	233.4	217.9	107.1%
		E	29.8	29.4	101.3%
		F	150.5	121.5	123.9%
		G	39.9	37.3	106.9%
		H	10.4	9.7	107.2%
		I	35.2	32.9	106.8%
		J	429.4	380.8	112.8%
		K	23.2	23.1	100.2%
		Total		1293.5	1192.1

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 2021-2022 and Summer 2022 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 (2021-2022)	A	114.7	120.0	95.6%	
		B	12.1	19.2	63.0%	
		C	57.1	64.9	88.0%	
		D	73.0	71.9	101.6%	
		E	10.3	11.8	87.8%	
		F	62.1	76.6	81.1%	
		G	16.4	17.7	92.7%	
		H	8.3	8.3	99.9%	
		I	12.2	15.6	78.4%	
		J	173.9	181.3	95.9%	
		K	7.1	10.8	65.9%	
		Total		547.3	597.9	91.5%

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 (2022)	A	211.0	202.4	104.2%	
		B	18.8	23.6	79.3%	
		C	69.0	76.9	89.8%	
		D	228.9	217.5	105.2%	
		E	20.1	25.1	80.1%	
		F	22.2	14.2	155.8%	
		G	29.7	35.6	83.5%	
		H	10.5	8.8	119.5%	
		I	18.4	27.3	67.4%	
		J	253.0	317.9	79.6%	
		K	9.8	16.7	58.7%	
		Total		891.3	966.1	92.3%

b. Event Performance

In 2022 the NYISO activated SCR and EDRP resources twice in Zone F to maintain transmission security:

- On July 19th, 2022, SCR and EDRP resources were deployed in Zone F from 4 pm to 10 pm. Response was mandatory for the entire event, and scarcity pricing was triggered for a total of eight five-minute intervals during the six-hour event.
- On July 20<sup>th</sup>, 2022, SCR and EDRP resources were deployed in Zone F from 3 pm to 10 pm. Response was mandatory for the entire event, scarcity pricing was triggered for a total of thirteen five-minute intervals during the seven-hour event.

Table 11 summarizes SCR and EDRP response based on ACL and CBL, respectively, for all 2022 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 2022 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. 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 11: Summary of 2022 Event Performance using ACL for SCRs and CBL for EDRP resources**

Deployment Type	Event Day	Event Start Time	Event End Time	Zone	SCR (using ACL as baseline)			EDRP (using CBL as baseline)			Reliability Program-wide		
					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
NYISO Event	7/19/2022	7/19/2022 16:00	7/19/2022 22:00	F	109.7	114.2	96.0%	0.0	0.0	0.0%	109.7	114.2	96.0%
NYISO Event	7/20/2022	7/20/2022 15:00	7/20/2022 22:00	F	97.3	114.2	85.2%	0.0	0.0	0.0%	97.3	114.2	85.2%

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 2022 Event Performance using CBL for SCRs and EDRP resources**

Deployment Type	Event Day	Event Start Time	Event End Time	Zone	SCR (using CBL as baseline)				EDRP (using CBL as baseline)				Reliability Program-wide			
					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
NYISO Event	7/19/2022	7/19/2022 16:00	7/19/2022 22:00	F	86.9	102.9	84.5%	\$ 235,384.55	0.0	0.0	0.0%	\$ -	86.9	102.9	84.5%	\$ 235,384.55
NYISO Event	7/20/2022	7/20/2022 15:00	7/20/2022 22:00	F	77.9	97.2	80.2%	\$ 404,774.47	0.0	0.0	0.0%	\$ -	77.9	97.2	80.2%	\$ 404,774.47

## **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 2022 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.<sup>13</sup> 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 for the 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

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<sup>13</sup> *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).

ultimately be required to transition to the DER Participation Model or withdraw from the market. Effective upon the deployment date of the DER participation model in 2023, 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.<sup>14</sup> In 2017 the NYISO published a DER Roadmap<sup>15</sup> describing NYISO's vision for integrating these resources into the wholesale markets and proposed a market design concept to its stakeholders.<sup>16</sup> 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<sup>17</sup> 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 currently implementing the defined software requirements and has begun developing the Manuals needed for the implementation of the DER / Aggregation rules. The NYISO anticipates implementing its market design in Q2 2023.

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<sup>14</sup> The NYISO's initiative to integrate DER will also include market rules for participation in the NYISO's capacity and ancillary services markets.

<sup>15</sup> 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](https://www.nyiso.com/documents/20142/1391862/Distributed_Energy_Resources_Roadmap.pdf).

<sup>16</sup> 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>

<sup>17</sup> 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.<sup>18</sup> The Commission issued an Order approving the NYISO's compliance filing, subject to additional compliance requirements, on June 17, 2022.<sup>19</sup> The NYISO submitted its second compliance filing on November 14, 2022 addressing the directives of the June 17, 2022 Order.<sup>20</sup> As of the date of this Report, the Commission has not issued a final Order in this proceeding.

## **VII. 2023 Demand Response Initiatives**

This section provides an overview of the projects that the NYISO has planned for its demand response programs for 2023.

### 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 2023. The NYISO anticipates implementing its market design in Q2 2023. The DER participation model will offer demand response resources a single, streamlined, participation model under which they may offer all of the wholesale market services they are technically capable of providing, enhancing wholesale market participation opportunities.

## FERC Order No. 2222 Compliance

The NYISO submitted its second Order No. 2222 Compliance Filing on November 14, 2022, addressing the directives contained in FERC's June 17, 2022 Order on Compliance. FERC has not issued an Order on the NYISO's second Order on Compliance as of the date of this report.

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<sup>18</sup> *New York Indep. Sys. Operator, Inc.*, Compliance Filing and Request for Flexible Effective Date, Docket No. ER21-2460-000 (Jul. 19, 2021).

<sup>19</sup> *New York Indep. Sys. Operator, Inc.*, Order on Compliance Filing, 179 FERC ¶ 61,198 (Jun. 17, 2022).

<sup>20</sup> *New York Indep. Sys. Operator, Inc.*, Compliance Filing, Docket No. ER21-2460-003 (Nov. 14, 2022).

## **Appendix A: Detailed Event Response for Summer 2022 Demand Response Events**

This Appendix A includes additional data on event response for the two NYISO wholesale SCR Program and EDRP activations. The following tables are presented for each 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.



## NYISO Activations

### July 19, 2022: Mandatory SCR response beginning with hour beginning 16:00 in Zone F; EDRP Response also requested

**Table A-1: Event Summary – July 19, 2022**

	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)	F	109.7	114.2	96.0%	\$ 235,384.55
EDRP and SCRs treated as EDRP	F	0.0	0.0	0.0%	\$ -
Total		109.7	114.2	96.0%	\$ 235,384.55

**Table A-2: SCR MW Response Based on ACL – July 19, 2022**

Zone	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW
F	117.9	112.1	118.5	118.5	102.3	88.6	109.7	114.2	96.0%
Total	117.9	112.1	118.5	118.5	102.3	88.6	109.7	114.2	96.0%

**Table A-3: SCR MW Response Based on CBL – July 19, 2022**

Zone	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW of SCRs Reporting CBL Data	% Response of Obligated ICAP MW
F	100.2	93.6	98.1	94.7	75.9	58.9	86.9	102.9	84.5%
Total	100.2	93.6	98.1	94.7	75.9	58.9	86.9	102.9	84.5%

**Table A-4: SCR Energy Payments – July 19, 2022**

Zone	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	Sum of LBMP Payments	Sum of BPCG Payments	Total Payments
F	\$23,819.06	\$37,980.96	\$14,057.15	\$18,229.57	\$11,754.65	\$16,286.00	\$122,127.39	\$113,257.16	\$235,384.55
Total	\$23,819.06	\$37,980.96	\$14,057.15	\$18,229.57	\$11,754.65	\$16,286.00	\$122,127.39	\$113,257.16	\$235,384.55

**Table A-5: Energy Response of EDRP Resources and SCRs treated as EDRP – July 19, 2022**

Zone	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	Average Hourly Response MW	Available EDRP MW	% Response of Available MW
F	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%

**Table A-6: Energy Payments to EDRP Resources and SCRs treated as EDRP – July 19, 2022**

Zone	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	Sum of LBMP Payments
F	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**July 20, 2022: Mandatory SCR response in Zone F; EDRP Response also requested**

**Table A-7: Event Summary – July 20, 2022**

	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)	F	97.3	114.2	85.2%	\$ 404,774.47
EDRP and SCRs treated as EDRP	F	0.0	0.0	0.0%	\$ -
Total		97.3	114.2	85.2%	\$ 404,774.47

**Table A-8: SCR MW Response Based on ACL – July 20, 2022**

Zone	HB 15	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW	% Response of Obligated ICAP MW
F	95.6	103.7	103.2	105.2	103.5	87.5	82.4	97.3	114.2	85.2%
Total	95.6	103.7	103.2	105.2	103.5	87.5	82.4	97.3	114.2	85.2%

**Table A-9: SCR MW Response Based on CBL – July 20, 2022**

Zone	HB 15	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	ICAP Equivalent of Average Hourly Response MW	Obligated ICAP MW of SCRs Reporting CBL Data	% Response of Obligated ICAP MW
F	80.3	88.8	87.6	86.8	82.2	63.9	56.0	77.9	97.2	80.2%
Total	80.3	88.8	87.6	86.8	82.2	63.9	56.0	77.9	97.2	80.2%

**Table A-10: SCR Energy Payments – July 20, 2022**

Zone	HB 15	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	Sum of LBMP Payments	Sum of BPCG Payments	Total Payments
F	\$20,128.91	\$28,496.14	\$62,050.87	\$104,960.31	\$106,434.99	\$55,518.70	\$ 26,607.77	\$404,197.71	\$ 576.76	\$ 404,774.47
Total	\$20,128.91	\$28,496.14	\$62,050.87	\$104,960.31	\$106,434.99	\$55,518.70	\$ 26,607.77	\$404,197.71	\$ 576.76	\$ 404,774.47

**Table A-11: Energy Response of EDRP Resources and SCRs treated as EDRP – July 20, 2022**

Zone	HB 15	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	Average Hourly Response MW	Available EDRP MW	% Response of Available MW
F	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%

**Table A-12: Energy Payments to EDRP Resources and SCRs treated as EDRP – July 20, 2022**

Zone	HB 15	HB 16	HB 17	HB 18	HB 19	HB 20	HB 21	Sum of LBMP Payments
F	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -