

November 15, 2023

**VIA ELECTRONIC DELIVERY**

Honorable Michelle L. Phillips  
Secretary  
New York State Public Service Commission  
Three Empire State Plaza  
Albany, New York 12223-1350

**RE: Case 14-E-0423 – Proceeding on Motion of the Commission to Develop  
Dynamic Load Management Programs**

**Case 15-E-0189 – Petition by Niagara Mohawk Power Corporation to  
Effectuate Dynamic Load Management Programs**

**NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID  
– DYNAMIC LOAD MANAGEMENT PROGRAMS ANNUAL REPORT  
FOR 2023 CAPABILITY PERIOD**

Dear Secretary Phillips:

In accordance with the requirements first set forth in the Commission’s June 18, 2015 *Order Adopting Dynamic Load Management Filings with Modifications* and as modified in subsequent orders including the Commission’s April 23, 2018 *Order Adopting Program Changes with Modification and Making Other Findings* and March 18, 2019 *Order Adopting Program Changes with Modifications and Making Other Findings* in Cases 14-E-0423 *et al.*, Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid”) hereby submits for filing its annual report addressing the assessment of National Grid’s dynamic load management (“DLM”) programs for the 2023 capability period and identifying changes that are planned for the 2024 capability period.

This annual report is submitted in redacted form to protect certain confidential information. The unredacted pages are being filed contemporaneously with the Records Access Officer seeking confidential treatment.

Hon. Michelle L. Phillips, Secretary  
National Grid - Dynamic Load Management Programs Annual Report for 2023 Capability Period  
November 15, 2023  
Page 2 of 2

Please direct any questions regarding this filing to:

Michael Smith  
Lead Program Manager – C&I Portfolio Delivery NY  
National Grid  
1125 Broadway  
Albany, New York 12204  
Tel.: (518) 257-9101  
Email: [michael.smith2@nationalgrid.com](mailto:michael.smith2@nationalgrid.com)

Thank you.

Respectfully submitted,

*/s/ Janet M. Audunson*

Janet M. Audunson, P.E., Esq.  
Assistant General Counsel

Enc.

cc: Marco Padula, DPS Staff, w/enclosure (via electronic mail)  
Robert Cully, DPS Staff, w/enclosure (via electronic mail)  
Paul Darmetko, DPS Staff, w/enclosure (via electronic mail)  
Mary Ann Sorrentino, DPS Staff, w/enclosure (via electronic mail)  
Allison Manz, DPS Staff, w/enclosure (via electronic mail)  
Jane Wang, DPS Staff, w/enclosure (via electronic mail)  
Kate Overacker, DPS Staff, w/enclosure (via electronic mail)  
Cathy Hughto-Delzer, w/enclosure (via electronic mail)  
David Lovelady, w/enclosure (via electronic mail)  
Jake Navarro, w/enclosure (via electronic mail)  
Kellie Smith, w/enclosure (via electronic mail)  
Renee Devine, w/enclosure (via electronic mail)  
Sara Robarge-Trombley, w/enclosure (via electronic mail)  
Carol Teixeira, w/enclosure (via electronic mail)  
Michael Smith, w/enclosure (via electronic mail)  
Nathan Yehle, w/enclosure (via electronic mail)  
Jeffrey Varecka, w/enclosure (via electronic mail)  
Donald Howell, w/enclosure (via electronic mail)  
Jared Martin, w/enclosure (via electronic mail)

**REDACTED VERSION**



Niagara Mohawk Power Corporation d/b/a National Grid

Program Performance and Cost Effectiveness  
of  
Dynamic Load Management Programs

Case 15-E-0189

November 15, 2023

# Table of Contents

- Introduction..... 1
- Commercial Demand Response Programs—DLRP, CSRP, Term-DLM Program and Auto-DLM Program ..... 4
  - 2023 DLRP, CSRP, and Term-DLM Participation..... 5
  - 2023 DLRP and CSRP Costs and Savings..... 5
  - Cost Recovery ..... 6
  - DLRP and CSRP Benefits..... 7
  - Benefit-Cost Analysis for DLRP and CSRP..... 7
  - 2023 CSRP Operations ..... 10
  - 2023 CSRP Event Performance and System Impacts ..... 11
  - 2023 DLRP and CSRP Sales and Marketing ..... 14
  - 2023 Term DLM and Auto-DLM Operations..... 15
  - Term-DLM and Auto-DLM Procurement Review ..... 15
  - 2023 Term-DLM Event Performance and System Impacts..... 16
  - 2023 Term-DLM and Auto-DLM Sales and Marketing ..... 18
  - 2023 Term-DLM and Auto-DLM Costs and Savings..... 18
  - \*Costs are estimates, given that spending for Q4 2023 has been estimated based on actual spending in Q1-Q3 2023. .... 19
  - Benefit-Cost Analysis for Term-DLM/Auto-DLM Programs ..... 19
  - Website Development for DLRP, CSRP, Term-DLM, and Auto-DLM..... 21
  - 2023 DLRP, CSRP, Term-DLM, and Auto-DLM Changes ..... 22
  - DLRP, CSRP, Term-DLM Program, and Auto-DLM Program Conclusion ..... 22
- Direct Load Control (“DLC”) Program ..... 23
  - ConnectedSolutions** Program..... 23
    - Introduction and Program Operations..... 23
    - Technology Overview and DR Events..... 25
    - Program Incentives ..... 26
    - 2023 Program Costs and Savings..... 27
    - \*Figures for October-December included in the totals are estimated..... 27
    - Benefit-Cost Analysis for **ConnectedSolutions** DLC Program..... 27
    - ConnectedSolutions** Marketing and Recruitment ..... 29
    - ConnectedSolutions** Website Development..... 30
    - 2024 DLC Program Changes and Updates ..... 30
    - DLM Program Conclusion..... 33

## Introduction

Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid” or the “Company”) submits this 2023 annual filing in compliance with the New York State Public Service Commission’s (“Commission”) April 23, 2018 *Order Adopting Program Changes with Modification and Making Other Findings* (“April 2018 Order”).<sup>1</sup> The April 2018 Order requires the Company to submit a report to the Commission each year on November 15.<sup>2</sup> This annual filing assesses National Grid’s 2023 Dynamic Load Management (“DLM”) programs as approved in the Commission’s March 18, 2019 *Order Adopting Program Changes with Modifications and Making Other Findings* (“March 2019 Order”).<sup>3</sup>

National Grid’s DLM programs consist of the: Distribution Load Relief Program (“DLRP”) as described in Rule 61 of the Company’s PSC No. 220 Electricity – Schedule for Electric Service (“Tariff”); Commercial System Relief Program (“CSR”) as described in Rule 62 of the Tariff; and Direct Load Control (“DLC”) Program, as described in Rule 63 of the Tariff. The Company also amended the Tariff to incorporate Rule 65 to effectuate the Term-Dynamic Load Management (“Term-DLM”) Program and the Auto-Dynamic Load (“Auto-DLM”) Program, consistent with the Commission’s September 17, 2020 *Order Establishing Term-Dynamic Load Management and Auto-Dynamic Load Management Program Procurements and Associated Cost-Recovery* (“Term- and Auto-DLM Procurement Order”).<sup>4</sup> This annual filing reviews the 2023 Capability Period results from all DLM programs, discusses all proposed changes to the implementation of these programs in 2024, and highlights the cost recovery mechanism, which is described in Rule 64 of the Tariff.<sup>5</sup>

While customers in most rate classes are eligible for all DLM programs, National Grid considers the DLRP, CSR, Term-DLM Program and Auto-DLM Program to be commercial and industrial (“C&I”) customer-focused programs, while the DLC Program targets residential and small business customers. The CSR and the system-wide Bring Your Own Device (“BYOD”) DLC Program (also known as the **ConnectedSolutions** Program) are currently offered system-wide.

---

<sup>1</sup> Cases 14-E-0423 *et al.*, *Proceeding on Motion of the Commission to Develop Dynamic Load Management Programs* (“DLM Programs Proceeding”), Order Adopting Program Changes with Modification and Making Other Findings (issued April 23, 2018) (“April 2018 Order”).

<sup>2</sup> *Id.*, Ordering Clause No. 2, pp. 24-25.

<sup>3</sup> See DLM Programs Proceeding, Order Adopting Program Changes with Modifications and Making Other Findings (issued March 18, 2019) (“March 2019 Order”).

<sup>4</sup> Cases 18-E-0130 *et al.*, *In the Matter of Energy Storage Deployment Program* (“Energy Storage Proceeding”), Order Establishing Term-Dynamic Load Management and Auto-Dynamic Load Management Procurements and Associated Cost-Recovery (issued September 17, 2020) (“Term- and Auto-DLM Procurement Order”).

<sup>5</sup> There are no changes proposed to the cost recovery mechanism for National Grid’s 2024 DLM programs.

A summary of National Grid’s 2023 DLM programs, provided below, illustrates the pricing incentives applicable to these current DLM programs (with the exception of Auto-DLM Program as there was no participation in that program in 2022):

**Table 1: National Grid’s 2023 DLM Programs**

Program Name	Program Type	Program Event Triggers and Duration	Incentives
Distribution Load Relief Program (“DLRP”)	Contingency	<p>Contingency program activated for system critical situations (<i>i.e.</i>, unforeseen distribution system emergencies wherein stressed electrical equipment may exceed established limits).</p> <p>Events are called with short/no advance notice ("Immediate") or at least two (2) hours advance notice ("Test" or "Contingency"). Test events last one (1) hour whereas Contingency or Immediate events may last four (4) or more hours.</p> <p>Includes Reservation and Voluntary participants.</p> <p>Focused in designated or identified constrained areas of the service territory with participation available to customers served at primary and secondary voltages only.</p>	<p>Reservation Payment Option:</p> <ul style="list-style-type: none"> <li>• Reservation Payment = \$0.00/kW Month</li> <li>• Performance Payment = \$0.00/kWh</li> </ul> <p>Voluntary Performance Option:</p> <ul style="list-style-type: none"> <li>• Performance Payment = \$0.00/kWh</li> </ul> <p>* National Grid has set the incentives to \$0.00 for the DLRP in response to the March 2019 Order. When conditions warrant, the DLRP incentives will be updated on an "as-needed" basis." <sup>6</sup></p>

<sup>6</sup> See DLM Programs Proceeding, March 2019 Order, p. 3.

<p>Commercial System Relief Program (“CSRP”)</p>	<p>Peak Shaving</p>	<p>Activated for peak shaving needs.</p> <p>For "Planned Events" the Company provides &gt; 21 hours’ advance notice and the Planned Event may last four (4) hours or more.</p> <p>For "Unplanned Events" the Company will provide &lt; 21 hours’ advance notice.</p> <p>Includes Reservation and Voluntary options for participants.</p> <p>System-wide program available to customers served from all voltages.</p>	<p>Reservation Payment Option:</p> <ul style="list-style-type: none"> <li>• Reservation Payment (up to four (4) events) = \$2.75/kW Month;</li> <li>• Reservation Payment (over four (4) events) = \$3.00/kW Month;</li> <li>• Performance Payment - Planned Event = \$0.18/kWh;</li> <li>• Performance Payment Unplanned Event = \$0.22/kWh.</li> </ul> <p>Voluntary Performance Option: Payment Option:</p> <ul style="list-style-type: none"> <li>• Performance Payment Planned Event = \$0.16/kWh;</li> <li>• Performance Payment Unplanned Event = \$0.19/kWh</li> </ul>
<p>Term-DLM Program<sup>7</sup></p>	<p>Peak Shaving</p>	<p>Activated for peak shaving needs.</p> <p>Contracted through annual procurement. Participants submit a bid for participation and selected participants receive a 3-5 (or more) year contract at awarded participation rate.</p> <p>The Company provides &gt; 21 hours’ advance notice for curtailment during a contracted 4-hour window.</p> <p>System-wide program available to customers served from all voltages.</p>	<ul style="list-style-type: none"> <li>• Reservation Payment is set by competitive bid</li> <li>• Performance Payment = \$0.10/kWh</li> </ul>

<sup>7</sup> Term-DLM and Auto-DLM Programs are both implemented through a competitively procured bid process. Prices for these programs are not static and will remain confidential, but the structure of incentives is public through Rule 65 of the Tariff and each annual Request for Proposal (“RFP”) for soliciting participation in these programs is filed with the Commission and publicly available.

Auto-DLM Program	Contingency and Peak Shaving	<p>Activated for system critical situations or for peak shaving.</p> <p>Contracted through annual procurement. Participants submit a bid for participation and selected participants receive a 3-5 (or more) year contract at awarded participation rate.</p> <p>Events may be called 7 days a week, between 6AM-12AM on as little as 10 minutes' notice.</p> <p>Focused in identified constrained areas of the service territory with participation available to customers served at primary and secondary voltages only.</p>	<ul style="list-style-type: none"> <li>• Reservation Payment is set by competitive bid</li> <li>• Performance Payment = \$0.10/kWh</li> </ul>
Direct Load Control (“DLC”) Program		<p>Activated for system critical situations or for peak shaving. National Grid can remotely adjust thermostat settings.</p> <p>Bring Your Own Device (“BYOD”) program connects existing Wi-Fi thermostats to National Grid’s Demand Management Platform (<i>i.e.</i>, EnergyHub).</p>	<ul style="list-style-type: none"> <li>• One-time sign-up payment of \$30 and a \$20 yearly incentive - payable the second year of participation - for reducing load during 80% of called events and event-hours.</li> </ul>

## Commercial Demand Response Programs—DLRP, CSRP, Term-DLM Program and Auto-DLM Program

National Grid offers the DLRP, CSRP, Term-DLM Program, and Auto-DLM Program as commercial demand response (“DR”) programs. DLRP is a contingency program wherein individual participants are required to curtail 50 kW when participating directly in this program with the Company.

Aggregators are required to deliver at least 50 kW of load relief in aggregate in order to qualify for participation in DLRP or CSRP. An event under DLRP is to be called when identified or stressed electrical equipment exceeds certain limits or during any system emergency. The CSRP, Term-DLM Program, and Auto-DLM Programs are activated for peak-shaving needs when National Grid’s electrical system exceeds 92 percent of the system-wide 95/5 peak forecast, as defined in the Tariff. Additionally, the Auto-DLM Program is activated to provide load relief in constrained locations to prevent or mitigate overload situations on the Company’s electric grid.

## 2023 DLRP, CSRP, and Term-DLM Participation

Per the March 2019 Order, to accommodate present conditions while remaining prepared for future market conditions, National Grid has set DLRP pricing incentives to \$0.00. This will act as a placeholder preserving the program for future use. As such, there were no participants in DLRP in 2023. In contrast, 216 resources participated in CSRP during the 2023 Capability Period, totaling 159.05 MW of contracted curtailment. In the 2023 program year, six (6) aggregators and four (4) individual participants participated in CSRP, resulting in the net loss of one (1) aggregator due to a merger and a net addition of one (1) new individual participant since the 2022 Capability Period. Additional information about 2023 CSRP performance is presented below in the 2023 CSRP Operations and the 2023 CSRP Event Performance and System Impacts section of this report. A single aggregator was awarded a contract to begin participating in Term-DLM in the 2022 Vintage Year and that aggregator returned to perform in 2023 along with three (3) aggregators who were awarded contracts to begin participating in Term-DLM in the 2023 Vintage Year. In total, these four (4) aggregators brought 49 resources totaling 82.6 MW of contracted curtailment. Additional information about the 2023 Term-DLM program performance is presented in the 2023 Term-DLM Operations section of this report.

## 2023 DLRP and CSRP Costs and Savings

The costs for DLRP and CSRP are shown below in Table 2 and stated as a combined C&I portfolio for the Company's C&I programs. There were no customers in DLRP in 2023.

Total costs associated with National Grid's 2023 C&I Programs are \$3,014,154. These costs are separated by incentive payments (including both Reservation and Performance Payments), program operations (consisting of internal administrative (labor) costs), evaluation costs (external), and vendor costs. Base costs associated with the setup of EnergyHub, Inc. ("EnergyHub"), a commercial Demand Response Management System ("DRMS") vendor, were paid in full upfront for three (3) years in 2020. These base costs have not been included in Table 2 below as part of the total costs for CSRP; however, the portion of the costs and fees associated with supporting the 2023 Capability Period are included.

**Table 2: 2023 DLRP and CSRP Costs\***

<b>Program Components</b>	<b>2023 C&amp;I Program* Component Costs</b>	<b>DLM Surcharge Recoverable</b>	<b>DLM Surcharge Non-Recoverable</b>
<b>Incentive Payments</b>	\$2,556,874	\$2,556,874	-
<b>Program Operations (internal) **</b>	\$315,280	-	\$315,280
<b>Evaluation Costs (external)</b>	\$2,000	\$2,000	-
<b>External Vendor Costs</b>	\$140,000	-	\$140,000
<b>Total</b>	<b>\$3,014,154</b>	<b>\$2,558,874</b>	<b>\$455,280</b>

\*C&I Programs includes CSRP and DLRP only, and Term-DLM and Auto-DLM Programs are reported separately.

\*\* Costs are estimates only, given that spending for Q4 2023 has been estimated based on actual spending in Q1-Q3 2023.

## Cost Recovery

Per the Commission’s April 19, 2018 order addressing cost recovery,<sup>8</sup> the Company revised the allocation of costs recovered for each DLM program beginning with the 2018 Capability Period. Prior to May 1, 2018, all DLM program costs were recovered through the Company’s DLM surcharge from all customer classes using a transmission allocator. The program costs were also reconciled monthly in the DLM surcharge. However, since May 1, 2018, National Grid has recovered the costs of the DLRP and DLC program from all streetlighting customers, and from electric customers served at secondary or primary voltage delivery levels. Beginning with the 2018 Capability Period, the DLRP and DLC Program costs are allocated using a non-coincident peak allocator to apportion costs amount the service classes. The CSRP costs are still recovered from all customers using a remission allocator to apportion costs among the service classes. Since May 1, 2018, all program costs are now reconciled on an annual basis in the DLM surcharge.

<sup>8</sup> DLM Programs Proceeding, Order Directing Tariff Filings (issued April 19, 2018).

## DLRP and CSRP Benefits

As noted in previous DLM annual reports filed by National Grid, there are several benefits for both the customer and utility from the implementation of commercial DR programs. Highlighted below are some of these benefits:

### Customer Benefits:

- Monetary compensation that potentially can lower electric bills
- Non-traditional revenue streams from incentives and related rebates
- Demand charge reduction on customer bills
- Potential ratchet avoidance (demand)
- Reduced stress on customer's electrical equipment

### Utility Benefits:

- Deferred capital project costs that are due to:
  - Reduced overall electric system stress
  - Direct project savings in designated or constrained areas
- Enhanced communications and interactions with customers which include:
  - Positive touch points and interactions with customers
  - Enhancements of the Company's "trusted advisor" role
- Reduced commodity costs
- Reduction in electrical system stress

### Community/Societal Benefits:

- Lower greenhouse gas ("GHG") emissions due to reduced need for peaking power plants, which have been historically higher polluters
- Potential increase in electrical reliability, particularly in designated or constrained areas
- Deferral of disruptive utility construction projects

## Benefit-Cost Analysis for DLRP and CSRP

This section provides the results of the completed benefit-cost analysis ("BCA") for the DLRP and CSRP using the Societal Cost Test ("SCT"), Utility Cost Test ("UCT"), and Ratepayer Impact Measure ("RIM")

for the 2023 program year. There are program-specific cost and benefit inputs that were incorporated into the analysis to calculate the BCA.

The 2023 BCA for DLRP and CSRP was calculated for each of the three tests (SCT, UCT, and RIM) and the resulting costs, benefits, and net benefits are provided below in Tables 3-5. Costs for Q4 2023 have been estimated due to the timing of this report.<sup>9</sup> The BCA was performed using the 2023 program year pricing incentives in each of the three tests.

The SCT is used to measure and value the net costs and benefits to society, as based on current DR programs. This test analyzes the programs’ BCA in entirety and compares the costs that have been incurred for the implementation of the program to customer costs with avoided electricity and other supply-side resource costs. The SCT also includes the cost of externalities to provide a framework for whether a program should continue to be implemented. The SCT for the commercial portfolio (*i.e.*, the combined DLRP and CSRP) yields a result of [REDACTED] and [REDACTED] in net benefits. Table 3 below applies the SCT test to the DLRP and CSRP as a commercial program portfolio.<sup>10</sup>

**Table 3: Cost-effectiveness Tests for 2023 DLRP and CSRP Using the SCT:**

<b>National Grid Demand Response Cost-effectiveness SCT Results</b>	
	<b>DLRP* &amp; CSRP Total C&amp;I</b>
<b>Benefits</b>	[REDACTED]
<b>Costs</b>	\$3,014,154
<b>Net Benefits</b>	[REDACTED]
<b>SCT</b>	[REDACTED]

\*Cost treatment for the BCAs have been kept consistent with previous filings and include the DRMS costs associated with the capability period. For 2023 National Grid has combined the program table view since DLRP is not active.

The UCT analyzes the costs and benefits from the perspective of National Grid. This test is integral in identifying impacts on utility revenue requirements and provides information on the effectiveness of

<sup>9</sup> Labor/administrative costs have been estimated for October, November, and December 2023.

<sup>10</sup> *Id.*

program delivery in 2023. The UCT is determined by the costs that have been incurred to implement the commercial DLM programs as compared to the avoided electricity supply-side costs. The UCT for the commercial DLM portfolio yields a result of [REDACTED] and [REDACTED] in net benefits in 2023. Table 4 below displays the UCT for DLRP and CSRP as a commercial program portfolio.<sup>11</sup>

**Table 4: Cost-effectiveness Tests for 2023 DLRP and CSRP Using the UCT:**

<b>National Grid Demand Response Cost-effectiveness UCT Results</b>	
	<b>DLRP* &amp; CSRP Total C&amp;I</b>
<b>Benefits</b>	[REDACTED]
<b>Costs</b>	\$2,698,874
<b>Net Benefits</b>	[REDACTED]
<b>UCT</b>	[REDACTED]

\*Cost treatment for the BCAs have been kept consistent with previous filings and include the DRMS cost associated with the capability period. For 2023 National Grid has combined the program table view since DLRP is not active.

The RIM is from the viewpoint of National Grid’s customers in aggregate. This test determines what happens to average prices for customers due to changes in utility revenue and operating costs. The test determines whether funding requirements need to be increased for the utility program. The RIM for the commercial DLM portfolio yields a result of [REDACTED] and [REDACTED] in net benefits. Table 5 below displays the RIM for DLRP and CSRP as a commercial program portfolio.<sup>12</sup>

**Table 5: Cost-effectiveness Tests for 2023 DLRP and CSRP Using the RIM:**

<b>National Grid Demand Response Cost-effectiveness RIM Results</b>	
	<b>DLRP* &amp; CSRP Total C&amp;I</b>
<b>Benefits</b>	[REDACTED]
<b>Costs</b>	\$3,487,021
<b>Net Benefits</b>	[REDACTED]
<b>RIM</b>	[REDACTED]

\*Cost treatment for the BCAs have been kept consistent with previous filings and include the DRMS cost associated with the capability period. For 2023 National Grid has combined the program table view since DLRP is not active.

A benefit-cost ratio (“BCR”) above 1.0 indicates that a program is cost effective. The BCR for each of the tests for National Grid’s commercial DLM portfolio is above 1.0. To maintain the cost-effectiveness

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

of the DLM program portfolio, the Company will continue to effectively manage program spending and will endeavor to increase participation and enrollment in these commercial programs.

## 2023 CSRP Operations

National Grid has enrolled 216 customers through six (6) aggregators and four (4) individual participants for CSRP in 2023. The total amount of enrolled capacity from these customers was 159.055 MW.

Program operating costs for 2023 were included in Table 2 in *2023 DLRP and CSRP Costs* section above, and were composed of implementation activities including, but not limited to:

- Tariff leaves preparation
- Incentive setting
- Internal departmental outreach and coordination
- Program implementation
- Incentive calculation and processing
- Sales team presentations
- Customer acquisition
- Measurement and Verification (“M&V”) preparation and calculation of results
- Aggregator communications
- Valuation and analyzing constrained areas
- Coordination work with other utilities, and
- Document and report preparations

Checking all accounts in National Grid’s customer system for accuracy of:

- Customer account information
- New York Independent System Operator (“NYISO”) zones
- Customer service/mailing addresses
- Supply station/feeder/voltage-level data
- Peak load information

Aggregator and customer management:

- Cooperative discussions about process improvements and set-up with EnergyHub
- Creation of bulk enrollment comma-separated values (“CSV”) files

- Identification of website improvements required for internal teams
- Discussion and guidance on event M&V results

Program Management:

- Aggregator administrative support
- Event notification process improvements
- Day-ahead forecast accuracy checks
- Accounting set up – CSRP payments with customers
- Customer Base Load (“CBL”) calculations for M&V review
- Capacity reduction calculation
- Customer payment calculation
- Performance factor maintenance
- NYISO customer coordination with CSRP

DRMS Configuration:

- Customer enrollment and set up in DRMS
- Settlement calculations for customers (completed through EnergyHub, with manual M&V calculations for review)
- Accurate reporting of DR event calculations by working with Transmission Control Center (“TCC”) and EnergyHub
- Effective internal IT integration for EnergyHub
- Event notification tests for customers to ensure accurate event dispatch

## 2023 CSRP Event Performance and System Impacts

National Grid’s service territory experienced an unusually cool August and a late season system demand peak on September 6. Warm periods in July and an unusually hot start to September resulted in multiple event days for the 2023 Capability Period. Six (6) events were called through the CSRP in the 2023 Capability Period, with three (3) of those in the month of July and three (3) in the month of September, as shown in Table 7 below. This season was similar to the 2022 season in having three (3) of the events occurring consecutively in a single week. Two (2) of the three (3) July events also occurred on consecutive days, one of which was an Unplanned Event. The 2023 Capability Period reinforced the importance of unplanned events and increased incentives as a key aspect of the CSRP. Table 6 below provides the enrolled curtailment for each of the four individual participants and the six aggregators for

2023. 3 capability period also saw the net addition of one (1) new Individual Participant and one (1) less Aggregator as the result of two existing Aggregators merging.

**Table 6: CSRP Enrolled Demand for 2023**

<b>Aggregator/Individual Participant</b>	<b>Enrolled Curtailment (MW)</b>
Aggregator 1	57.99
Aggregator 2	25.21
Aggregator 3	8.61
Aggregator 4	0.75
Aggregator 5	1.99
Aggregator 6	2.25
Individual Participant 1	55.00
Individual Participant 2	0.20
Individual Participant 3	0.06
Individual Participant 4	7.00
<b>Total Enrolled</b>	<b>159.04</b>

Demand curtailment benefits the Company’s electrical system. However, most of the load shedding was concentrated in NYISO Load Zone A (National Grid’s Western Division) despite a slightly larger number of customers participating in the CSRП being concentrated in NYISO Load Zone F (National Grid’s Eastern Division). Contracted Load Relief in Zone F was less than half that of Zone A. Refer to Table 8 below for load shedding associated with each load zone.

System impacts for the event dates and the total energy saved per event are shown in Table 7 below.

**Table 7: 2023 CSRП Event Results**

<b>Event Date</b>	<b>Actual Load Relief (kW)</b>	<b>Total Event Load Relief (kWh)</b>
7/5/2023*	134,258.01	537,032.03
7/6/2023	159,490.76	637,963.04
7/28/2023	177,778.25	711,113.01
9/5/2023	155,060.19	620,240.77
9/6/2023	158,472.89	633,891.57
9/7/2023	171,871.95	687,487.80

*\*7/5/23 Event was unplanned*

**Table 8: 2023 Contracted CSRП Load by NYISO Zone**

<b>NYISO Zone</b>	<b>CSRП Customers</b>	<b>Load (MW)</b>
A	60	94.44
B	18	1.55
C	31	3.39
D	1	0.02
E	36	15.50
F	70	44.14

Performance factors are calculated for each month of the 2023 Capability Period and displayed below for each of the six (6) aggregators and four (4) individual participants. Performance factors for the month of May 2023 were carried over from 2022 for the returning six (6) aggregators and three (3) individual participants who were enrolled in CSRP, whereas the one (1) new individual participant in 2023 was assigned the default Performance Factor to start the 2023 Capability Period. Two aggregators set performance factors below 25%, resulting in their ineligibility for reservation payments through the conclusion of the 2023 Capability Period, and one (1) aggregator carried a below 25% Performance Factor into the 2023 Capability Period from the 2022 Capability Period.

**Table 9: 2023 Performance Factors by Month**

	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>
<b>Aggregator 1</b>	0.70	0.70	0.95	0.95	0.67
<b>Aggregator 2</b>	0.76	0.76	0.45	0.45	0.18
<b>Aggregator 3</b>	0.9	0.9	1.00	1.00	0.55
<b>Aggregator 4</b>	0.22	0.22	0.35	0.35	0.16
<b>Aggregator 5</b>	0.68	0.68	1.00	1.00	0.57
<b>Aggregator 6</b>	0.86	0.86	0.93	0.93	0.79
<b>Individual Participant 1</b>	N/A	0.50	1.00	1.00	1.00
<b>Individual Participant 2</b>	1.00	1.00	1.00	1.00	1.00
<b>Individual Participant 3</b>	1.00	1.00	1.00	1.00	1.00
<b>Individual Participant 4</b>	N/A	0.95	1.00	1.00	1.00

## 2023 DLRP and CSRP Sales and Marketing

National Grid did not perform outreach for the DLRP in 2023 since the incentives remained at \$0 and therefore there would be no participation in the program. The CSRP outreach was conducted by aggregators and direct marketing to the customers contacts. National Grid directly marketed the 2023 CSRP to the aggregator pool via phone calls, emails, and in-person meetings. The Company also emailed and used targeted social media campaigns to contact decision-makers with eligible customers.

National Grid’s Market Development team, jurisdiction managers, and sales representatives served as the main point of contact internally for engaging customers to participate in the Company’s commercial DLM programs; these internal stakeholders maintain trusted relationships between the Company’s largest

customers and internal customer-facing groups. These National Grid teams are in constant contact with customers regarding issues that include but not limited to energy efficiency (“EE”) measures, billing matters, energy-related projects, and distributed energy resources (“DER”).

## 2023 Term DLM and Auto-DLM Operations

In October 2022, National Grid issued the 2022 Term-DLM and Auto-DLM Program RFP, soliciting resources to begin participation in the 2024 Vintage Year.<sup>13</sup> Responses were due in January 2023. As a result of this RFP, the Company received two bids totaling 17 MW of participation from two different aggregators for the Term-DLM Program and for the third year in a row, did not receive any bids for participation in the Auto-DLM Program. The two Term-DLM Program bids were \$█/kW-year, and \$█/kW-year.

Bids were evaluated for cost-effectiveness to determine which bids cleared and which did not. As a result of this bid review process, it was determined that all three bids cleared. The accepted bidders were awarded contracts for their bids of 15 MW and 2 MW of load relief with participation commencing in the 204 Vintage Year at a reservation payment rate of \$█/kW-year, and \$█/kW-year, respectively. One bidder of the 15 MW portfolio opted to accept their offered contract for capacity, while the other awarded bidder of the 2 MW portfolio opted not to accept their contract.

There was one Term-DLM aggregation which commenced participation in the 2022 Vintage Year, this aggregator was joined in 2023 by three (3) aggregators who were awarded 2023 Vintage Year contracts in January 2022. Participation results for these aggregations are shown below in Tables 10 and 11.

## Term-DLM and Auto-DLM Procurement Review

With three years of Term-DLM and Auto-DLM Program procurements completed, National Grid has observed significant interest from the marketplace in the Term-DLM Program. With 99.6 MW of Term-

---

<sup>13</sup> “Vintage Year” refers to the first Capability Period an Aggregator or Direct Participant is contractually obligated to participate in.

DLM capacity contracts awarded over three years, National Grid believes the design and procurement process for the Term-DLM Program is working effectively.

Unfortunately, the Company has found the Auto-DLM Program to be less successful. Over three years of procurement, the Company has received zero Auto-DLM bids. National Grid has been actively attempting to connect with stakeholders to understand how the Company can make the Auto-DLM Program more attractive to bidders. In response to stakeholder feedback after the first procurement (Vintage Years 2021 and 2022) was completed, the Company extended the procurement timeline, coordinated procurement release dates with other utilities, and added value tiers to the Auto-DLM locations for the Vintage Year 2023 procurement to help bidders understand the potential value of capacity in each location. For Vintage Year 2024, the Company extended the contract duration offered to 5 years (up from 3 years in Vintage Year 2023) and more closely tailored location-specific participation requirements to each location's need (*i.e.*, limiting required response hours to only the hours forecasted to need load relief over the contract period and extending response time when feasible based upon location needs). Unfortunately, all of these program improvements have failed to increase Auto-DLM participation.

### 2023 Term-DLM Event Performance and System Impacts

National Grid's service territory experienced an unusually cool August and warm periods in July and September, resulting in multiple event days for the 2023 Capability Period. Five (5) Term-DLM events were called in the 2023 Capability Period, with two (2) of those in the month of July and three (3) in the month of September, as shown in Table 11 below. Of the six (6) CSRP events called, only one did not coincide with a called Term-DLM event. This season was similar to the 2022 season with three (3) of the events occurring consecutively in a single week. Two of the July events also occurred on consecutive days, one of which was an Unplanned Event. The 2023 Capability Period reinforced the importance of anticipating unplanned events and increased incentives for those events as a key aspect of the Term-DLM Program. Table 10 below provides the enrolled curtailment by NYISO Load Zone for the single aggregation participating in the 2023 Vintage Year.

**Table 10: Term-DLM Enrolled Demand for 2023**

<b>NYISO Zone</b>	<b>Term-DLM Customers</b>	<b>Aggregator Load Relief Commitment (MW)</b>
A	16	67.46
B	3	1.45
C	8	1.01
D	0	0.00
E	3	0.35
F	19	12.32
<b>Aggregator Total Enrolled</b>	<b>49</b>	<b>82.6</b>

Demand curtailment benefits National Grid’s electrical system. However, most of the load shedding was concentrated in NYISO Load Zone A, National Grid’s Western Division, although a greater number of customers participating in the Term-DLM were concentrated in NYISO Load Zone F (National Grid’s Eastern Division) much less load relief was committed in Load Zone F.

System impacts for the event dates and the total energy saved per event are shown in Table 11 below.

**Table 11: 2023 Term-DLM Event Results**

<b>Event Date</b>	<b>Actual Load Relief (kW)</b>	<b>Total Event Load Relief (kWh)</b>
7/5/2023*	48,015.84	192,063.34
7/6/2023	91,246.94	364,987.77
9/5/2023	86,303.55	345,214.20
9/6/2023	88,585.68	354,342.72
9/7/2023	105,499.13	421,996.50

\*7/5/23 Event was unplanned

Performance factors are calculated on a seasonal basis for the Term-DLM Program. The four aggregators performed at 112% of their commitments for the 2023 Capability Period. This is despite one aggregator falling below the threshold where penalties may have been applied to their Reservation Payments.

## 2023 Term-DLM and Auto-DLM Sales and Marketing

National Grid's Market Development team, jurisdiction managers, and sales representatives served as the main point of contact internally for engaging customers to participate in the Company's commercial DLM programs; these internal stakeholders maintain trusted relationships between the Company's largest customers and internal customer-facing groups. These National Grid teams are in constant contact with customers regarding issues that include but not limited to EE measures, billing matters, energy-related projects, and DER. The Company also directly marketed this offering to decision-makers with eligible customers.

## 2023 Term-DLM and Auto-DLM Costs and Savings

The costs for Term-DLM and Auto-DLM are shown below in Table 12 and stated as a combined C&I portfolio for the Company's C&I programs. Costs are estimates, given that spending for Q4 2023 has been estimated based on actual spending in Q1-Q3 2023.

Total costs associated with the Company's 2023 Term-DLM and Auto-DLM Programs are [REDACTED]. These costs are separated by incentive payments (including both Reservation and Performance Payments) and program operations (consisting of internal administrative (labor) costs). Base costs associated with the setup of EnergyHub, Inc. ("EnergyHub"), National Grid's DRMS vendor, were paid in full upfront for three (3) years in 2020. These base costs have not been included in Table 12 below as part of the total costs for Term-DLM/Auto-DLM; however, the portion of the DRMS costs and fees associated with supporting the 2023 Capability Period are shown in Table 12.

**Table 12: 2023 Term-DLM and Auto-DLM Costs**

<b>Program Components</b>	<b>2023 Term-DLM and Auto-DLM Component Costs</b>	<b>DLM Surcharge Recoverable</b>	<b>DLM Surcharge Non-Recoverable</b>
<b>Term-DLM Incentives</b>	██████████	██████████	-
<b>Term-DLM Operations (internal)</b>	\$12,108.31	-	\$12,108.31
<b>Term-DLM Evaluation Costs (External)</b>	\$2,000.00	-	\$2,000.00
<b>Auto-DLM Operations Costs (Internal)</b>	\$17,436.11	-	\$17,436.11
<b>Auto-DLM Evaluation Costs (External)</b>	-	-	-
<b>DRMS Costs</b>	\$60,000.00	-	\$60,000.00
<b>Term-DLM and Auto- DLM Total</b>	██████████	██████████	<b>\$91,544.42</b>

\*Costs are estimates, given that spending for Q4 2023 has been estimated based on actual spending in Q1-Q3 2023.

### Benefit-Cost Analysis for Term-DLM/Auto-DLM Programs

This section provides the results of the completed BCA for Term-DLM using the SCT, UCT, and RIM for the 2023 program year. There are program-specific cost and benefit inputs that were incorporated into the analysis to calculate the BCA.

The 2023 BCA for Term-DLM/Auto-DLM is evaluated using each of the three tests (SCT, UCT, and RIM) and the resulting costs, benefits, and net benefits are provided below in Tables 13-15. Costs for Q4 2023 have been estimated due to the timing of this report.<sup>14</sup> The BCA was performed using the 2023 program year pricing incentives for the Term-DLM Program in each of the three tests.

The SCT is used to measure and value the net costs and benefits to society, as based on current DR programs. This test analyzes the programs’ BCA in entirety and compares the costs that have been incurred for the implementation of the program to customer costs with avoided electricity and other

<sup>14</sup> Labor/administrative costs have been estimated for October, November, and December 2023.

supply-side resource costs. The SCT also includes the cost of externalities to provide a framework for whether a program should continue to be implemented. The SCT for the Term-DLM and Auto-DLM portfolio yields a result of [REDACTED] and [REDACTED] in net benefits. Table 13 below displays the results of applying the SCT test to the Term-DLM and Auto-DLM commercial program.<sup>15</sup>

**Table 13: Cost-effectiveness Tests for 2023 Term-DLM Program Using the SCT:**

National Grid Demand Response Cost-effectiveness SCT Results	
	Term-DLM and Auto-DLM
<b>Benefits</b>	[REDACTED]
<b>Costs</b>	[REDACTED]
<b>Net Benefits</b>	[REDACTED]
SCT	[REDACTED]

The UCT determines the costs and benefits from the perspective of National Grid. This test is integral in identifying impacts on utility revenue requirements and provides information on the effectiveness of program delivery in 2023. The UCT is determined by the costs that have been incurred to implement the Term-DLM Program and Auto-DLM Programs as compared to the avoided electricity supply-side costs. The UCT for the Term-DLM and Auto-DLM portfolio yields a result of [REDACTED] and [REDACTED] net benefits in 2023. Table 14 below displays the UCT for Term-DLM and Auto-DLM as a commercial program portfolio.<sup>16</sup>

**Table 14: Cost-effectiveness Tests for 2023 Term-DLM Using the UCT:**

National Grid Demand Response Cost-effectiveness UCT Results	
	Term-DLM and Auto-DLM
<b>Benefits</b>	[REDACTED]
<b>Costs</b>	[REDACTED]
<b>Net Benefits</b>	[REDACTED]
UCT	[REDACTED]

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

The RIM is from the viewpoint of National Grid’s customers in aggregate. This test determines what happens to average prices for customers due to changes in utility revenue and operating costs. The test determines whether funding requirements need to be increased for the utility program. The RIM for the Term-DLM Program and Auto-DLM portfolio yields a result of [REDACTED] and [REDACTED] in net benefits. Table 15 below displays the RIM for Term-DLM and Auto-DLM as a commercial program portfolio.<sup>17</sup>

**Table 15: Cost-effectiveness Tests for 2023 Term DLM Using the RIM:**

<b>National Grid Demand Response Cost-effectiveness RIM Results</b>	
	<b>Term-DLM and Auto-DLM</b>
<b>Benefits</b>	[REDACTED]
<b>Costs</b>	[REDACTED]
<b>Net Benefits</b>	[REDACTED]
<b>RIM</b>	[REDACTED]

A benefit-cost ratio (“BCR”) above 1.0 indicates that a program is cost effective. The BCR for each of the tests for National Grid’s commercial Term-DLM Program is above 1.0, meaning that this program is cost-effective by these measures. To maintain the cost-effectiveness of the Term-DLM and Auto-DLM Program portfolio, the Company will continue to effectively manage program spending and will endeavor to increase participation and enrollment in these commercial programs.

### Website Development for DLRP, CSRP, Term-DLM, and Auto-DLM

National Grid continues to review the DLRP, CSRP, Term-DLM, and Auto-DLM content on the National Grid website to ensure accuracy and clarity of program descriptions. This includes updating aggregator information and updating and editing links and information as needed so customers can have a clear understanding of the programs. As new programs or aspects of the existing programs develop or become available, National Grid will continue to update content for transparency and clarity to customers and aggregators. The main page for commercial customers to access DR information is available at: <https://www.nationalgridus.com/Upstate-NY-Business/Demand-Response/Electric-Demand-Response-Solutions>

---

<sup>17</sup> *Id.*

## 2023 DLRP, CSR, Term-DLM, and Auto-DLM Changes

Following three unsuccessful Auto-DLM procurement cycles, as well as three rounds of program adjustments based upon stakeholder feedback to attempt to increase program participation, the Company is proposing a more substantive change to the Auto-DLM program related to the procurement mechanism. In response to stakeholder feedback that more visibility into potential incentives/revenue would be a key driver for potential Auto-DLM participants, the Company, along with other Indicated Utilities,<sup>18</sup> submitted a petition to the Public Service Commission requesting that the Commission modify its requirement that Term-DLM and Auto-DLM procurements use a pay-as-bid model, to allow for more flexibility in procurement mechanisms to allow for more price visibility to prospective bidders.<sup>19</sup> If this Petition is approved, the Company will seek to consider new, more price visible procurement models in future Term-DLM and Auto-DLM procurements.

Additionally, the Company is proposing a change to align CSR customer eligibility and dual-participation rules with the existing requirements for Term-DLM and Auto-DLM. Currently, Term-DLM and Auto-DLM exclude Phase One NEM customers from participating in the programs, while CSR does not. After completing a full review of CSR and Term-DLM/Auto-DLM eligibility criteria, the Company believes this difference in eligibility is an oversight, and it is appropriate to extend this exclusion of Phase One NEM from Term-DLM/Auto-DLM to CSR, to more fully align these programs. The Company has filed draft tariff changes reflecting this update under both the CSR and Phase One NEM tariff rules.

## DLRP, CSR, Term-DLM Program, and Auto-DLM Program Conclusion

National Grid has continued to evaluate the role and interactions of the DLRP, CSR, Term-DLM Program, and Auto-DLM Program in 2023 in the Company's commercial DLM portfolio. The DLRP incentive level was previously set to "\$0" and will remain that way until a Company need arises.

National Grid will continue to investigate additional constrained areas and increase targeted DR offerings through coordination with the Company's non-wires alternatives ("NWA") and Distribution Planning and Asset Management ("DPAM") teams. CSR continues to be the Company's largest and most impactful

---

<sup>18</sup> The Indicated Utilities are Central Hudson Gas & Electric Corporation, New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., and Rochester Gas and Electric Corporation.

<sup>19</sup> Energy Storage Proceeding, Petition of the Indicated Utilities Seeking Certain Minor Amendments to the Commission's Direction Concerning Dynamic Load Management Program Procurement (filed August 1, 2023) ("Petition").

DR program, with the largest curtailment potential and number of enrolled customers. The CSRP continues to perform reliably and offers customers a familiar option for DR participation. The Term-DLM Program continues to grow in number of participating aggregations and committed capacity. Based upon the continued success of these programs through 2023, National Grid expects the program will continue this strong growth over the coming years. While the Auto-DLM Program has not seen the same strong participation as the Term-DLM Program, the Company believes it is an important component of the DLM portfolio and as such continues to focus on program updates and modifications that will increase market interest in participation. As the cost of advanced technology options which enable customers to increase their load flexibility potential continues to decrease, National Grid is hopeful that customer interest and participation in programs like Auto-DLM will increase.

## Direct Load Control (“DLC”) Program

### ConnectedSolutions Program

#### Introduction and Program Operations

**ConnectedSolutions** is a system-wide DLC Program that began in 2016. This peak-shaving and reliability program is implemented in coordination with the DR programs of National Grid’s affiliate in Massachusetts. **ConnectedSolutions** is a BYOD program that currently supports eight (8) Wi-Fi connected thermostat manufacturers. **ConnectedSolutions** is operated in partnership with EnergyHub, a Brooklyn-based company that works with National Grid to support the growth of the Company’s DLC Programs through its DRMS. DRMS fulfills National Grid’s needs of allowing both residential and small commercial customers to sign up for DR programs through an automated registration process using a web-based interface. EnergyHub provides for:

- Ease of the initial set-up for the residential demand management platform
- Platform capability to connect to major thermostat manufacturers to enable and validate eligible customer information
- Ability for residential customers to sign up for DLC Programs through an automated registration process using a web-based interface
- Verification of customer eligibility through contact information submitted to National Grid and to the platform
- Calling of DR events through the web-based interface or portal

- Reception of post-event data for both customers and National Grid based on events and the entire DR season
- Scalability and growth potential for DLC Programs
- Overall potential to integrate other connected devices, including solar inverters and energy storage systems in the future
- Potential to cut costs and increase overall efficiencies through device integration

The partnership with EnergyHub was initially established in coordination with National Grid's affiliates in Massachusetts and Rhode Island where total costs and efficiencies were split between three jurisdictions.<sup>20</sup> EnergyHub works directly with thermostat manufacturers to enroll and control thermostats in the **ConnectedSolutions** Program. This added benefit decreases the administrative burden and permits a common, integrated platform for thermostat manufacturers, reducing costs of program operation.

Some of the DLC tasks this year included:

#### Vendor Management:

- Identification of website improvements needed
- Event notification discussions/processes with the vendor
- Customer support system improvements

#### Program Management:

- Event trigger process improvements
- Event notification process improvements
- Payment of sign-up and performance incentives to customers
- Verification of customer information through EnergyHub portal
- Coordination and expansion of National Grid and EnergyHub marketing efforts

#### DRMS Configuration:

- Refreshed DRMS design and accessibility
- Customer enrollment and set up within online portal

---

<sup>20</sup> With the sale of National Grid's Rhode Island affiliate, Narragansett Electric Company, to PPL Rhode Island Holdings, LLP on May 25, 2022, EnergyHub costs are now split between National Grid and its Massachusetts' affiliate only.

- Calling of DR events from EnergyHub portal

Additional benefits from the DLC Program include:

- Avoided generation capacity costs
- Avoided Locational Based Marginal Pricing (“LBMP”)
- Avoided transmission capacity infrastructure costs
- Wholesale market price impacts
- Avoided distribution capacity infrastructure costs
- Net avoided CO<sub>2</sub>, SO<sub>2</sub>, and NO<sub>x</sub> emissions

There was an incremental growth of 3,051 thermostats enrolled in **ConnectedSolutions** as of November 1, 2023, for a total of 25,004 thermostats in the program. This demonstrates growth from the 2022 enrollment total of 22,118 thermostats despite that during the 2023 Capability Period there were 3,654 total un-enrollments in the program.

The **ConnectedSolutions** Program saw a 14 percent enrollment rate increase for 2023 over 2022. National Grid anticipates additional growth of the **ConnectedSolutions** Program in 2024, particularly with an increase in marketing strategies that will be described later in this report, and with the increase of enrollments for thermostat manufacturers that are newer entrants to the DLC Program.

## Technology Overview and DR Events

There was a total of six (6) events held during the 2023 Capability Period for the **ConnectedSolutions** Program. Below is a summary of the 2023 Capability Period DR events:

**Table 16: 2023 ConnectedSolutions DR Events**

	7/6/2023	7/27/2023	7/28/2023	9/5/2023	9/6/2023	9/7/2023
Number of Participants	22,856	22,315	23,386	23,894	23,937	24,130
Demand Reduction (MW)	34.43	22.95	31.18	27.26	27.68	23.96
Total Energy Savings (MWh)	77.7	64.03	69.51	52.44	49.26	50.44
Average Reduction per Device (kW)	1.13	0.91	0.99	0.73	0.69	0.7
Average Participation (%)	93.20%	90.08%	87.13%	86.52%	84.77%	86.74%

The duration of each **ConnectedSolutions** event was three (3) hours for the 2023 Capability Period. One (1) event was administered from 3:00 pm-6:00 pm and five (5) events were administered from 4:00 pm-7:00 pm.

Through the course of the 2023 Capability Period and the six (6) events this summer, the number of participants has grown. The demand reduction in 2023 has grown for all the six (6) events at an average demand reduction of 27.91 MW. Average participation throughout all six (6) events has increased significantly to 88%, primarily due to removal of non-participating enrolled devices for the 2023 Capability Period. The slightly lower performance in the September events is attributed to baseline usage having been driven down in August due to unseasonably wet and cool temperatures.

### Program Incentives

Customers receive a \$30 incentive for signing up for the **ConnectedSolutions** program through the participation of the eight (8) current thermostat manufacturers. Customers become eligible to receive a \$20 participation payment beginning in their second year of participation in the program if they participate in 80 percent of the DR events or event-hours called.

## 2023 Program Costs and Savings

Total **ConnectedSolutions** Program costs include all demand management platform charges from EnergyHub, program operation costs, any hardware and equipment costs, and total marketing fees. Costs for the months of November and December 2023 have been estimated due to the timing of this report.<sup>21</sup> The table below illustrates program costs for **ConnectedSolutions**:

**Table 17: 2023 ConnectedSolutions Program Costs**

<b>2023 ConnectedSolutions Program Costs*</b>	
Device Manufacturer Annual Fees & External Vendor Costs	\$738,040
Performance and Enrollment Incentives Costs	\$343,811
Internal Labor and Administrative Costs	\$43,570.70
<b>External Evaluation Costs</b>	\$2,000.00
<b>Total</b>	<b>\$1,125,422</b>

\*Figures for October-December included in the totals are estimated.

The average curtailment for the 2023 Capability Period was 15,745 kW. Therefore, with a corresponding total program cost of \$1,125,422, the cost/kW equals \$54.83/kW for the **ConnectedSolutions** Program.

## Benefit-Cost Analysis for **ConnectedSolutions** DLC Program

This section details the evaluation of BCA for the **ConnectedSolutions** Program using the SCT, UCT, and RIM tests. These BCA tests portray the cost-effectiveness of the Company's DLC Program portfolio.

The SCT for the **ConnectedSolutions** Program, including avoided generation capacity costs, yields a result of 3.07 and \$2,331,180 in net benefits. Table 18 below displays the SCT for the **ConnectedSolutions** Program.

---

<sup>21</sup> Performance incentives and labor/administrative costs have been estimated for October, November, and December 2023.

**Table 18: Cost-effectiveness Tests for 2023 DLC Program Using the SCT**

<b>National Grid Demand Response Cost-effectiveness SCT Results</b>	
	<b>DLC</b>
<b>Benefits</b>	\$3,458,602
<b>Costs</b>	\$1,127,433
<b>Net Benefits</b>	\$2,331,180
<b>SCT</b>	<b>3.07</b>

The UCT, including avoided generation capacity costs, for **ConnectedSolutions** yields a result of 3.18 and \$2,360,971 in net benefits. Table 19 below displays the UCT for the **ConnectedSolutions** Program.

**Table 19: Cost-effectiveness Tests for 2023 DLC Program Using the UCT**

<b>National Grid Demand Response Cost-effectiveness UCT Results</b>	
	<b>DLC</b>
<b>Benefits</b>	\$3,444,822
<b>Costs</b>	\$1,083,851
<b>Net Benefits</b>	\$2,360,971
<b>UCT</b>	<b>3.18</b>

The RIM for the DLC Portfolio, including avoided generation capacity costs, yields a result of 2.90 and \$2,258,761 in net benefits. Table 20 below displays the RIM for the **ConnectedSolutions** Program.

**Table 20: Cost-effectiveness Tests for 2023 DLC Program Using the RIM**

<b>National Grid Demand Response Cost-effectiveness RIM Results</b>	
	<b>DLC</b>
<b>Benefits</b>	\$3,444,822
<b>Costs</b>	\$1,186,062
<b>Net Benefits</b>	\$2,258,761
<b>RIM</b>	<b>2.90</b>

A BCR above 1.0 indicates that a program is cost effective. The BCR for each of the tests for National Grid’s **ConnectedSolutions** Program is above 1.0. As a result, National Grid does not propose any change to the pricing incentives. Based on interim enrollment trends, National Grid continues to expect the number of devices participating at the start of the 2024 Capability Period to increase steadily.

## ConnectedSolutions Marketing and Recruitment

National Grid is taking a multi-channel approach to recruitment in order to increase participation in the **ConnectedSolutions** program. As in years past, Honeywell, ecobee, and Google Nest have also continued to contact customers directly for program recruitment. However, the **ConnectedSolutions** Program outreach was undertaken mainly by the partnership between National Grid and EnergyHub. EnergyHub has continued to play a key role in aligning 2023 brand messaging, recruitment efforts, and other marketing campaigns between National Grid and our largest partner thermostat manufacturers. In 2023 there were 16 email blasts that generated over 1 million total impressions. The email open rates for **ConnectedSolutions** were approximately 30 percent, continuing to outpace the industry average. Additionally, a direct mail campaign promoting the program was deployed once again for 2023; the direct mail campaign saw a 4% conversion rate. The ThermostatRewards campaigns launched in 2023 also generated 275 unique visits of the approximately 450 customers who submitted forms on the ThermostatRewards landing page. Over 9,200 unique visitors were driven to the **ConnectedSolutions** Program website via this enrollment email messaging over the course of 2023. National Grid will continue to engage customers through these recruitment emails and direct mail efforts in years to come.

Since 2020, National Grid has promoted enrollment in the **ConnectedSolutions** Program at the point of purchase for Google Nest and ecobee thermostats on the Company's online Marketplace which continued through 2023. Due to relative lack of customer benefits realized via the Marketplace, the Marketplace will be sunset in 2024. In 2024, program eligibility is anticipated to be expanded to customers with the new Amazon Smart Thermostat. National Grid will continue to include multiple marketing channels such as direct outreach to customers who took advantage of rebates available from utilities for installation of Wi-Fi thermostats or other energy upgrades. Other methods, such as point-of-purchase displays in retail outlets (*e.g.*, The Home Depot) may also be used as a recruitment tool in future program years.

The Company is also continually investigating the cost effectiveness of including other residential devices and technologies in the **ConnectedSolutions** Program to determine whether they merit DLC Program expansion.

## ConnectedSolutions Website Development

In 2022, the website and landing page for the **ConnectedSolutions** Program were further updated to include all the relevant information for the Company's customers. National Grid will continuously review the **ConnectedSolutions** landing page and revise as necessary.

National Grid promotes the **ConnectedSolutions** Program as a part of smart thermostat flash sales that occur periodically as a part of the promotion of National Grid's EE programs. Customers can participate in the smart thermostat flash sale and will be redirected to the National Grid DR website to allow participation in the **ConnectedSolutions** Program.

Customers can sign up and access information about the **ConnectedSolutions** Program at <https://enrollmythermostat.com/connectedsolutionsny/>

The program website serves as a central repository of information and directs customers to the sign-up form for the **ConnectedSolutions** Program. National Grid's web marketing team has been administering and improving the program website to make it clear and easy for customers to access all relevant information about the **ConnectedSolutions** Program.

## 2024 DLC Program Changes and Updates

For the 2024 Capability Period, National Grid is proposing an expansion of the Direct Load Control Program to allow for participation of battery storage within DLC.

When a National Grid residential or small business customer installs an energy storage system, there is no clear path this customer to leverage their device for market participation. While larger customers with interval metering have many DLM participation options installing a battery storage system in DLM programs, including CSRP, Term-DLM Program and Auto-DLM Program, residential and small business customers do not currently have the interval metering required for participation in CSRP, DLRP, Term-DLM Program or Auto-DLM Program and voluntary installation of interval metering can be cost-prohibitive. Because of this, there are hundreds of customers with residential and small commercial battery storage systems that sits idle during system peaks, when C&I customers or customers with a communicating thermostat are being called upon to provide load flexibility to meet system needs.

Since its inception, the ConnectedSolutions program has proved to be an effective way to allow customers to leverage their communicating control technology to participate in Company demand response events, provide grid services, and receive financial incentives for their participation. Allowing customers to participate directly via their device removes any barriers to participation caused by the customer's metering configuration, leverages the existing strong relationship between customers, service providers and the utility, and allows for a seamless "hands-off" approach for customers to participate in load flexibility while always maintaining the ability to opt out at any time.

National Grid believes a "Bring Your Own Battery" program design similar that which has proven so successful for thermostats will provide many of the same advantages for customers with residential and small commercial battery energy storage technology. The communication and telemetry capabilities of the customer's own energy storage technology removes the need for any specific metering capabilities (such as interval metering). This greatly expands the number of potential participants that can participate in a "Bring Your Own" device modeled program. Allowing customers to enroll via qualified device partners allows National Grid to leverage the strong relationships between customer and their device partner to facilitate greater participation in the DLC programs. Device partner outreach and marketing in support the BYO thermostat program has proven extremely effective, and the Company believes this relationship will prove similarly effective for residential and small commercial energy storage systems. Lastly, the "Bring Your Own" device model allows customers to participate in demand response and grid services events with very little intervention required on their part and very little discomfort, a key factor in customers' long-term interest in these programs. At the same time, this model allows the customer to opt out of any event at any time should they decide they do not wish to participate, which is essential for customer residential and small business customer satisfaction with DLC programs.

While the Company believes the "Bring Your Own" device program design used for thermostats will also be effective for energy storage systems, there are a few unique considerations we believe need to be accounted for with a "Bring Your Own Battery" program. The first significant distinction is based on how customer performance is measured and how a customer is compensated for their participation in events. Device telemetry provided by energy storage systems provides a much more direct view of load flexibility provided by the energy storage system, compared to telemetry provided by communicating thermostats, which is more runtime focused on HVAC runtime. Due to this difference in data availability, National Grid believes that a customer incentive for energy storage should be focused on customer performance (in terms of kW delivered) during Company-dispatched events, rather than based

upon customer enrollment and participation in percentage of event hours as is done with thermostats. National Grid has conducted preliminary program-level Bring Your Own Battery BCA to use forecasted program costs to design a performance incentive that appropriately values customer performance with their storage system while ensuring that the program can be operated cost-effectively. As a result of this analysis, National Grid tentatively plans to offer an incentive of \$50/kW-year for energy storage customers participating in the Bring Your Own Battery program. The Company will conduct further analysis over the coming months with the final incentive being filed no less than 60 days before the effective date.

The second significant distinction between thermostats and energy storage systems is how these devices are purchased by customers. When a customer acquires a new communicating thermostat, they simply purchase the device from a retailer and in most instances, install it themselves. Once a customer buys a thermostat, they own it outright. The purchase process for energy storage systems differs significantly from that of thermostats. Energy storage systems are much more expensive than thermostats and cannot be installed by a customer directly – they require professional installation. They may also be installed at the same time the customer is purchasing a solar PV system. Due to the cost and complexity of these systems, energy storage systems are often not paid for in full upfront by a customer, but are financed, leased, or acquired through a Power Purchase Agreement (PPA) instead. Because of the more complex contractual relationships tied to energy storage acquisition, an important trend in energy storage system incentives is to allow for a customer to assign the incentive directly to a service provider. Upfront incentives to encourage customers to purchase storage systems are routinely paid directly to a service provider to reduce a customer's monthly financing or leasing costs. The same structure can be valuable for performance incentives. When a customer has financed or leased an energy storage system and earns a performance incentive from a utility program, the ability for that customer to assign the incentive directly to their energy storage service provider is a valuable means for them to reduce their out-of-pocket costs for their energy storage system.

Concurrent to the filing of this report, National Grid has filed the draft tariff modifying the DLC tariff language to incorporate these distinctions between energy storage systems and thermostat program models. <https://marketplace.nationalgridus.com/>

## DLM Program Conclusion

Implementation of National Grid's DLM programs is aligned with New York State's goals, particularly those of the 2019 Climate Leadership and Community Protection Act ("CLCPA").<sup>22</sup> The CLCPA establishes goals that 70 percent of statewide electric generation be provided by renewable energy systems by 2030 and 100 percent zero-emission electricity by 2040. Avoidance of carbon emissions through DR programs contributes to the State's goals. DR has been proven to lower carbon emissions and contribute to overall peak load reduction.

National Grid's DLM programs have grown significantly in the 2023 Capability Period. Although the months of July and September each saw the need for multiple events called for the CSRP, Term-DLM Program, and DLC Program, National Grid was able to relieve stress on the Company's electrical equipment and overall electric system through implementing these system-wide DLM programs. National Grid seeks to increase customer engagement and impart an understanding about each customer's role in grid reliability and flexibility, reduction of GHG emissions, and peak load curtailment as an overall benefit to the grid through the Company's DLM programs.

---

<sup>22</sup> Chapter 106 of the Laws of 2019. The CLCPA is *available at* <https://www.nysenate.gov/legislation/bills/2019/s6599>