STATE OF NEW YORK PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission to Consider Demand Response Initiatives

Petition of Consolidated Edison Company of New York, Inc. for Approval of Direct Load Control Program

Tariff Amendments to Make Various Revisions to Rider U – Distribution Load Relief Program (DLRP) in Compliance with Commission Order Issued April 8, 2009 in this Case Case No. 09-E-0115

Case No. 10-E-0229

Case No. 08-E-1463

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. REPORT ON PROGRAM PERFORMANCE AND COST EFFECTIVENESS OF DEMAND RESPONSE PROGRAMS

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Dated: December 1, 2015

Table of Contents

1.	INTRODUCTION	3
2.	DISTRIBUTION LOAD RELIEF PROGRAM ("DLRP")	5
3.	COMMERCIAL SYSTEM RELIEF PROGRAM ("CSRP")18	3
4.	COMMERCIAL DEMAND RESPONSE THREE-YEAR INCENTIVE UPDATE	7
5.	COMMERCIAL COST EFFECTIVENESS SUMMARY	3
6.	SC 11 CUSTOMERS - EXPORT DEMAND RESPONSE)
7.	NYPA)
8.	UPDATE ON METER DATA ACCESS)
9.	COMMERCIAL PROGRAM CONCLUSIONS	1
10.	DIRECT LOAD CONTROL PROGRAM ("DLC")	3
11.	RESIDENTIAL SMART APPLIANCE PROGRAM ("RSAP") EXTENSTION)
App	endix A: DLRP Event Performance Charts)
App Ach	endix B: DLRP Reservation Payment Option and Voluntary Participation Programs - Enrolled and ieved System Impacts	7
App	endix C: CSRP Test Event Performance Charts70)
App Ach	endix D: CSRP Reservation Payment Option and Voluntary Participation Programs - Enrolled and ieved System Impacts	2
App	endix E: DLC Test & Event Performance	5
App	endix F: 2015 – 2011 Con Edison Demand Response Event Review	1

1. INTRODUCTION

Consolidated Edison Company of New York, Inc. ("Con Edison" or the "Company") submits this evaluation of its Demand Response ("DR") programs pursuant to the New York Public Service Commission's ("Commission" or "PSC") October 23, 2009 *Order Adopting in Part and Modifying in Part Con Edison's Proposed Demand Response Programs* ("October Order"). The October Order requires that the Company submit a report to the Commission by December 1 of each year assessing the four DR programs approved in the October Order.¹

The programs are the Commercial System Relief Program ("Rider S" or "CSRP"), Residential Smart Appliance Program ("RSAP"), Critical Peak Rebate Program ("Rider T" or "CPRP") and Network Relief Program ("NRP").² The report also includes the Rider U – Distributed Load Relief Program ("Rider U" or "DLRP") and the Rider L - Direct Load Control Program ("DLC" or "DLC Program").³ In addition, the report addresses reporting requirements pertaining to meter data access during all tests and DR events.⁴ As directed by the Commission in its March 13, 2014 *Order Adopting Tariff Revisions with Modifications* (March Order"), the report also includes an analysis on enrollment for Rider S and Rider U.⁵ The report covers the

¹ Case 09-E-0115, Proceeding on Motion of the Commission to Consider Demand Response Initiatives, *Order Adopting in Part and Modifying in Part Con Edison's Proposed Demand Response Programs*, issued and effective October 23, 2009, pp. 25-26.

² CPRP is not discussed in this evaluation because in a subsequent order in this proceeding the Commission allowed the Company to eliminate the CPRP and to create a voluntary participation option in the CSRP program to accommodate existing CPRP large customer participants. *Order Adopting with Modifications Tariff Amendments Related to Demand Response Programs*, issued and effective March 15, 2012, p. 9.

³ The Commission directed that the DLC evaluation be included as part of the Company's evaluation of its demand response programs in Case 10-E-0229, Petition of Consolidated Edison Company of New York, Inc. for Approval of Direct Load Control Program, *Staff Recommends Approval of the Continuation of the Company's Direct Load Control Program as Described in this Memorandum – Approved as Recommended and So Ordered*, issued and effective September 22, 2010, p. 10. While not required to do so, the Company has included DLRP in this report in order to provide the Commission with a comprehensive assessment of its demand response programs.

⁴ The Commission directed that the Company file a report on the status of its meter access plan implementation each year as part of its demand response program assessment report in Case 08-E-1463, Plan for Providing Rider U Data Access in a Manner that Supports Market Requirements and Customer Needs, *Staff Recommends that the Company's Proposed Plan Be Approved – Approved as Recommended and So Ordered*, issued and effective July 14, 2011, p. 4.

⁵ The Commission directed Con Edison to include in this report an analysis of the effect of the increased payment rates on enrollment, including actual enrollment and performance statistics in Case 13-E-0573, Tariff Filing by Consolidated Edison Company of New York, Inc. to Make Revisions to its Demand Response Programs Rider S –

cost components and program performance associated with the Company's DR programs for the 2015 program year, January 1, 2015 through December 31, 2015.

Con Edison offers two types of DR programs, contingency and peak shaving, which focus on supporting reliability and reducing costs of operating the electric distribution system. The programs operate during the summer period May 1 through September 30 and are summarized in the table below.

Program Acronym General Information		Incentive	
Distribution Load Relief Program – (NYC and Westchester County)	DLRP	Activated by Con Edison in response to system critical situations (Condition Yellow or voltage reduction). Events last for 4 or more hours. Premium paid for customers who pre- commit load through the Reservation Payment Option. Customers who did not pre- commit load participate through the Voluntary Participation Option.	Customers participating through the Reservation Payment Option receive a reservation payment of \$6.00 or \$15.00 per kW-month pledged and performed, depending on location, and Performance Payments equal to \$1.00 per kWh reduced. Customers participating through the Voluntary Participation Option are paid only a Performance Payment equal to \$3.00 per kWh reduced. Reservation Payment Option customers can receive an additional \$5 per kW per month for participation in the Three-Year Incentive.
Direct Load Control – (NYC and Westchester County)	DLC	Activated by Con Edison in system critical situations. Participation limited to Con Edison residential, religious and small business (demand less than 100 kW) customers with central air-conditioning. Allows Con Edison to remotely adjust thermostat settings. Also called for peak shaving events.	Customers receive a free programmable thermostat and an incentive payment of \$25 for residential customers per unique address, and \$50 for small commercial customers per unique building site. Customers also have the option to enroll through a Service Provider whereby they can receive an annual incentive payment of \$25

Table 1: Contingency programs

Commercial System Relief Program and Rider U – Distribution Load Relief Program contained in P.S.C. No. 10 – Electricity, *Order Adopting Tariff Revisions with Modifications*, issued and effective March 13, 2014, p. 15.

Program	Acronym	General Information	Incentive
Commercial System Relief Program – (NYC only)	CSRP	Event activated when day-ahead forecast is 96 percent or greater of forecasted summer system peak to relieve distribution network peak loads. Premium paid for customers who pre-commit load through the Reservation Payment Option. Customers who did not pre-commit load participate through the Voluntary Participation Option.	Customers participating through the Reservation Payment Option receive \$10/kW pledged and performed for months with fewer than 5 events and \$15/kW during and after a month with 5 or more events. Performance Payment is \$1.00 per kWh for each kW reduced during an event. Voluntary Participation Option customers receive a Performance Payment equal to \$3.00 for each kWh reduced. Reservation Payment Option customers can receive an additional \$10 per kW per month for participation in the Three-Year Incentive
Residential Smart Appliance Program (NYC only) [Pilot program]	RSAP	Event activated when day-ahead forecast is 96 percent or greater of forecasted summer system peak to relieve system peak load. Con Edison pilots technology and program models to better manage demand from residential appliances. In 2015, this included a number of investment and delivery models for room air conditioners with a remote thermostat control and set back capability. Program was available to Con Edison residential customers (Zone J) with WiFi and a compatible room air conditioner.	In 2015, participants earned points redeemable for gift cards. Rewards were called "coolPoints," and 1,000 points converted to \$1. Points were earned for connecting eligible devices (ranging between 10,000 and 90,000 points) and participating in demand response (5,000 points per event).

Table 2: Peak Shaving programs

The DR programs are divided by application type, contingency or peak-shaving, and also by customer type. The CSRP and DLRP programs are designed for larger commercial customers who are able to achieve a pledged reduction amount through their own demand reduction strategies. The programs each have a mandatory (Reservation Payment) and voluntary (Voluntary Participation) enrollment option with separate obligations and incentive rates. DLC and RSAP are programs for smaller commercial and residential customers. The segmentation by customer type is important, as the programs require specific operational processes, equipment, communication and education. This report is structured to reflect the segmentation.

Performance evaluation for each program for summer 2015 is based upon test event and actual event data for the contingency based programs and test event data for the peak-shaving programs. No actual peak-shaving events were called during the 2015 Capability Period because the 2015 summer had cooler than usual weather patterns.

2. DISTRIBUTION LOAD RELIEF PROGRAM ("DLRP")

DLRP is a network contingency DR program applicable to individual customers who contract to reduce 50 kW or more during an event and third-party market participants ("Aggregators") who contract to reduce 100 kW or more. DLRP may be called by the Company to reduce strain on local distribution lines within specific networks, defined as including load areas, when contingencies occur.

The incentive for the Reservation Payment Option is \$6.00 per kW-month in Tier One networks and \$15.00 per kW-month in Tier Two networks. The majority of the Company's networks are Tier One; Tier Two areas are those identified as higher priority and in need of additional demand reduction resources. Performance Payments for Reservation Payment Option customers are \$1.00 per kWh in both Tier One and Tier Two networks. Reservation Payment Option participants can receive both Reservation Payments and Performance Payments. As set forth in Tables 1 and 2 above, Reservation Payment Option Customers can also receive a Three-Year Incentive payment if they successfully complete three years of participation. Voluntary participants only receive Performance Payments.

DLRP Costs

Table 3 summarizes the costs, by component, associated with DLRP in 2015.

Component	Cost	Percentage
Customer Incentives	\$5,197,900	84%
Program Operation - Con Ed	\$311,800	5%
Program Operation - Vendor	\$346,500	6%
Program Marketing	\$226,900	4%
M&V	\$102,600	2%
Total Program Costs	\$6,183,900	100%

 Table 3: DLRP Cost Components for 2015 Program Year⁵

DLRP Cost Summary

Total costs for DLRP during the 2015 program year were \$6,183,900, an increase of 18 percent over the 2014 cost of \$5,225,200. Costs increased primarily due to an 18 percent increase in the megawatts enrolled in the Reservation Payment Option from 2014 to 2015.

Customer Incentives

Customer incentives in 2015 consisted of Performance and Reservation Payments paid to customers for their participation and performance in events and tests. There were 15 DLRP events and one test event in 2015. Voluntary DLRP customers are not tested. Table 4 below summarizes the DLRP test and events called in 2015. In total, the Company paid \$5,197,900 (84 percent of total program costs) in 2015 DLRP customer incentives. In addition to Reservation payments, the Company may be required to pay out the first Three-Year Incentive payments at the end of 2016. In the Company's September 24, 2015 filing requesting approval of changes to commercial DR programs ("September 24 Filing"),⁶ it requested the elimination of the Three-Year Incentive. If granted, the Company will pay out the Three-Year Incentive during the first quarter of 2016 with no additional Three-Year Incentive payments going forward. If the Three -Year Incentive is still in effect in 2016, the Company estimates that it will pay out \$4 million for the Three-Year Incentive in 2016 for

⁵ Costs for November and December have been estimated.

⁶ Case 15-E-0570, Tariff Filing by Consolidated Edison Company of New York, Inc. to Revise Its Commercial Demand Response Programs Contained P.S.C. No. 10 - Electricity and Conforming Revisions to Charge for Demand Management Programs Contained in P.S.C. No. 12 – Electricity, *Filing Letter*, September 24, 2015.

resources that started participating in 2014.⁷

<u>Program Operation – Con Edison</u>

Costs in this category include Con Edison staff salary and overhead associated with DLRP management and support. This includes, but is not limited to, work performed by program managers, specialists, and marketing staff. Program staff salaries are recovered through the operating and maintenance ("O&M") budget and via the monthly adjustment clause ("MAC"). Other operation costs are recovered via the MAC. The costs associated with program operation were \$311,800 (five percent of total program costs) in 2015. Costs were calculated using a percentage of time allocation for staff and support personnel to DLRP activities, with their associated salaries, overhead, and Administrative and Supervisory ("A&S") costs.

<u>Program Operation – Vendor</u>

Costs in this category include expenses related to operating functions performed by Con Edison vendors. More specifically, these costs include, but are not limited to Demand Response Management System ("DRMS") implementation. These costs totaled \$346,500 (six percent of total program costs) in 2015.

Program Marketing

Marketing costs include costs associated with Con Edison led program marketing initiatives required to inform and involve customers. These costs totaled \$226,900 (four percent of total program costs) in 2015. This program's marketing cost component does not include Con Edison staff salary associated with time spent on marketing events and marketing material design, which is included in the Program Operation – Con Edison category.

Aggregators provide the majority of program marketing to attract DR program participants. The Company plans to increase its marketing efforts to provide "background"

⁷ The estimated Three-Year Incentive was determined by multiplying the kW reductions realized by resources (limited to kW amount that was approved for enrollment), the Three-Year Incentive rate of \$5/kW per month, and the number of months of participation by the resource as of the end of the 2015 Capability period. Resources whose performance factor was less than 80% were excluded. Since some resources were disqualified from getting paid the Three-Year Incentive in 2015, more resources may be disqualified after 2016. The \$4 million estimate assumes that all the resources that qualified for the Three-Year Incentive at the end of 2015 will still qualify at the end of 2016.

customer education on the DR concept to support the third-party sales process as well as to inform customers about program rules.

Measurement and Verification

Costs included in this category are typically associated with projects completed by the Energy Efficiency and Demand Management ("EE&DM") department's Measurement and Verification group, as well as various studies that have been completed. In 2015, the only costs that were attributed to this category are those associated with completing the "willingness-to-accept" study (report entitled *Demand Response Survey Research Study - Commercial Demand Response Willingness-to-Accept and Performance Window Customer Research*). These costs totaled \$102,600 (two percent of program costs) in 2015.

DLRP Test and Event Performance and Network Impacts

This section focuses on two major areas: evaluation of performance and evaluation of impacts by network.

The goal of DLRP is to reduce the impact of grid contingencies by inducing customer load reductions prior to or at the time of an event. The achieved performance is calculated by subtracting customer/aggregator actual load from customer/aggregator baseline load. The performance factor is the ratio of the achieved load reduction to the pledged load reduction.

During the 2015 Capability Period, the Company called 15 DLRP events for contingency reasons. In addition, Reservation Payment Option customers were required to participate in the one-hour test event. The performance of participants during the test event is assessed in this section.

Customer load reductions are measured using a Customer Baseline Load ("CBL") methodology. A CBL is a representation of a customer's average hourly consumption based on the top five highest days of energy usage within a 10-weekday period selected from the 30 weekdays prior to an event. For weekend events, the CBL uses the top two highest weekend days from the past three weekends. The CBL is used to calculate a customer's performance during a test or event by taking the difference between the CBL and the customer's actual load on the event day. Customers have the choice of selecting an Average Day or Weather

Adjusted CBL depending on how they believe their load is normally affected by changes in the weather (usually heat). If the customer does not make a choice, the customer is assigned a Weather Adjusted CBL.

Test Summary and Event Summary

Performance of each Reservation Payment option customer is measured annually via event and/or test performance data. At least one test is conducted per Summer Capability Period. The mandatory component of DLRP represents approximately 98 percent of 2015 total DLRP load enrolled.

The performance factor on the June 24 DLRP test was 73 percent, excluding the performance of the SC11 export customer (it was 71% if the SC11 customer is included). In addition to the test event there were 15 DLRP events called across nine networks. The events were called for contingency reasons. Fifteen events is significantly more than last year when DLRP was not called besides the test event, but is more in line with the number of events seen in previous years (six in 2013 and 15 in 2012).

Testing the entire DLRP portfolio provides the best insight possible into how customers would perform over a large sample, but the individual events can shed light on characteristics of program performance under specific conditions. The performance data is summarized in Table 4 below and more detailed DLRP test data is included in Appendix A. The performance data shown in Table 4 is based on raw performance, which may differ from the load reductions used to calculate participant payments (which are capped at 100 percent or zero percent of individual pledged levels).

Test or Event	Date	Event/Test Hours	Customers Enrolled	MW Enrolled	MW Reduction Achieved	Performance Factor Achieved	Test/Event Network or Zone
Event	May 11	1:00 PM – 7:00 PM	21	5.1	2.1	41%	Beekman
Event	May 11	1:00 PM – 7:00 PM	4	1.4	1.3	90%	Empire
Event	May 11	1:00 PM – 7:00 PM	5	0.16	0.18	116%	Fashion
Event	May 11	1:00 PM – 7:00 PM	36	6.3	5.8	92%	Grand Central
Event	May 12	1:00 PM – 5:00 PM	21	5.1	2.7	52%	Beekman
Event	May 12	1:00 PM – 5:00 PM	4	1.4	1.1	80%	Empire
Event	May 12	1:00 PM – 5:00 PM	5	0.16	-0.08	-56%	Fashion
Event	May 12	1:00 PM – 5:00 PM	36	6.3	4.8	76%	Grand Central
Test	June 24	4:00 PM – 5:00 PM	760	228	161.4	71%*	All Networks
Event	July 19	7:00 PM – 12:00	4	0.8	0.0	0%	Fox Hills
Event	July 20	6:00 AM – 12:00	13	4.2	1.2	30%	Richmond Hill
Event	July 20	2:00 PM – 8:00 PM	4	0.8	0.5	60%	Fox Hills
Event	July 20	3:00 PM – 9:00 PM	16	2.6	0.9	32%	Fresh Kills
Event	July 20	5:00 PM - 11:00	17	2.1	1.5	71%	Harrison
Event	July 20	5:00 PM - 11:00	28	13.9	2.1	15%	Pennsylvania
Event	July 21	2:00 PM – 8:00 PM	4	0.8	0.4	45%	Fox Hills

Table 4: 2015 Summary of DLRP Test & Events

* The test event performance factor in the table includes SC11 account performance which is excluded from the analysis to determine operationally available MW.

The DLRP test was conducted on June 24, 2015 from 4:00 PM to 5:00 PM and included all Reservation Payment Option customers participating in the DLRP program at that time. The test event achieved exactly the same performance factor that was observed in the 2014 DLRP test. Although the year over year consistent performance helps improve confidence in predicting MW of operationally available DLRP Demand Response, the table above demonstrates there is still a significant range of performance factors seen at the network level.

DLRP event performance can be less predictable and consistent than test performance, as each event involves smaller subsets of customers in different situations (locations and call windows). Performance during events can be very heavily swayed by the particular subset of participants and their relative MW pledged in the event. Networks with a large portion of their total pledged reduction enrolled by a few customers can have their overall performance significantly influenced by the performance of a single customer. This effect is lessened in DLRP tests as there are significantly more customers participating.

In addition, the fact that a DLRP event can be called on weekends and nighttime hours, which generally are low demand and low staffing times, makes the load reduction achieved during these time periods less reliable. This is clearly demonstrated by the 0% performance factor for the Fox Hills event on Sunday July 19, which took place both on the weekend and in the evening.

The test provides slightly different insights than for CSRP, because mandatory DLRP customers are not penalized for non-performance. In DLRP only de-rating is applied. This means that in subsequent months after the test or event, customers with less than 100 percent performance will be paid a capacity payment based on actual performance. While this will result in reduced capacity income for the customer, it does not result in penalties, which may be experienced by CSRP customers. Understanding and expectations of resource performance, based on different incentives, gains importance as the Company integrates DR into operational planning.

DLRP Measurement and Methodology

Twenty-two percent of customers enrolled in the Reservation portion of DLRP elected to have their performance measured with the Average Day CBL. This is the same percentage as 2014 and very close to the 23 percent of 2013. The remaining customer performance was measured using the weather adjustment calculation for the test event. The weather adjustment allows for a variation range of up to 20 percent in either direction (increase or decrease) from that of an average day assumption to account for the weather on the day of the event compared with the five days used for the baseline. The weather adjustment factor is an important aspect of measuring and verifying customer reductions, since for many customers, their demand correlated with heat.

DLRP Network Impacts

To assess the potential impacts of DLRP at the network level, the Company analyzed the Reservation and Voluntary enrollment in each network to determine the potential impact in individual networks where the reductions were needed. Reservation performance was analyzed using the DLRP test for networks where an event was not called during the Capability Period and actual event data for the remaining networks. "Enrolled" is defined as the total pledged MWs in a network, without adjusting for performance factor. "Achieved reductions" were calculated using performance adjusted Reservation enrollments. Appendix A shows full performance data for the test event.

Assessment of Network Impacts

Table 5 below summarizes performance data for Tier One, Tier Two, and system-wide. Appendix B details program performance and network impacts as a percentage of network peaks for enrolled, anticipated and achieved reductions. The average achieved load reduction as a percentage of network peaks is approximately 1.30 percent, an improvement over 0.99 percent in 2014. The median achieved load reduction as a percentage of network peaks is approximately 0.74 percent. These figures indicate that DLRP continues to have a limited impact. Greater MW enrollment volume is required to increase the network impact of achieved load reductions and program changes have been filed to this end.

		nrollment & Av	Total Average Impact			
	Enrolled MW DLRP Reservation Payment Option	DLRP Mandatory Impact	Enrolled MW DLRP Voluntary Option	DLRP Voluntary Impact	Enrolled Mandatory DLRP + Enrolled Voluntary DLRP	Achieved Mandatory DLRP + Achieved Voluntary DLRP
Tier One Networks	211	1 86%	Д	0.03%	1 90%	1 27%
Tier Two	211	1.0070		0.0570	1.5070	1.2770
Networks	17	0.77%	0	0.00%	0.78%	0.49%
All Networks						
Load Areas	228	1.68%	4	0.03%	1.71%	1.14%

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Assessment of DLRP Program Growth

DLRP experienced an increase in both the number of customers participating and the total kW enrolled compared with 2014. As overall customer performance was maintained between 2014 and 2015, this resulted in an increase in total MW operationally available in 2015.

Table 6 below summarizes the resources enrolled in DLRP in 2015 compared to the resources in 2014 for the Reservation Payment Option component of the program, while Table 7 includes both Reservation Payment Option and Voluntary Participation Option enrollment combined. The tables show enrollment by tier and system wide.

As shown in Table 6, the majority of the growth in enrollment occurred in Tier One networks for Reservation Payment Option customers, a similar trend to what was seen from 2013 to 2014 (30% increase in enrolled MW). However, given the significant increase in DLRP incentives after the 2013 Capability Period, growth was not as high as expected given the time

the marketplace had to process the increased incentives. This supports anecdotes from continued conversations with Aggregators and customers that DR participation is driven by the annual reservation rate and not the possibility of earning additional incentives in three years. Assuming the Commission approves the Company's September 24 filing (referred to above), and aggregators and the Company have enough time to introduce the changes to the market, Con Edison expects stronger growth for the 2016 Capability Period.

	2014 MW Enrolled	2014 Operationally Available MW *	2015 MW Enrolled	2015 Operationally Available MW*	2015 vs. 2014 Change in MW Enrolled % Increase (Decrease)	2015 vs. 2014 Change in Operationally Available MW Increase (Decrease)
Tier One Networks	176	123	211	156	20%	27%
Tier Two Networks	17	14	17	10	0%	(29%)
All Networks/ Load Areas	193	137	228	166	18%	21%

Table 6: DLRP Reservation Payment Option Enrollment by Tier and System-Wide

* Adjustment based on Performance Factor (Values 0 to 1.0) and Voluntary enrollees excluded from table.

	2014 MW Enrolled	2014 Operationally Available MW *	2015 MW Enrolled	2015 Operationally Available MW *	2015 vs. 2014 Change in MW Enrolled % Increase (Decrease)	2015 vs. 2014 Change in MW with Derating % Increase (Decrease)
Tier One Networks	182	124	215	157	18%	27%
Tier Two Networks	18	14	14 17 10		(11%)	(29%)
All Networks/ Load Areas	200	138	232	167	16%	21%

Table 7: DLRP Overall Enrollment by Tier and System-Wide

* Adjustment based on Performance Factor (Values 0 to 1.0). Voluntary enrollees are included in this table.

The following charts quantify the following subcomponents of enrollments.

- New to DR these are enrollments that did not participate in any of the Company's commercial DR program in the previous year
- 2. New to DLRP- these are enrollments that only participated in CSRP in the prior year and then

enrolled in both CSRP and DLRP.

- 3. Enrollments transferred to the program these are enrollments that participated in one program in the prior year and in the following year enrolled in the other program. For example, if a customer participated in DLRP last year and this year enrolled in CSRP, that customer would be included in this category.
- 4. Enrollments that remained in the program these are enrollments that participated in the program in the previous year and re-enrolled this year.
- Enrollments that transferred from program for example, when looking at the DLRP enrollment breakdown, these are enrollments that discontinued their enrollment in DLRP and enrolled in CSRP or vice-versa when looking at CSRP.
- 6. Dropped all DR these are enrollments that participated in one or both programs last year, but no longer participated in any program this year.
- 7. Dropped from a DR program enrollments from the prior year that participated in both programs but only enrolled in one program this year are in this category.

This information provides insights into how incentive changes have affected enrollments. Key findings are that in 2015 the Company experienced the fewest number of MWs and customers leaving Con Edison demand response programs since 2011 and the number of MWs and customers that remained in DLRP were 20% and 21% larger respectively than the average from 2010 to 2014. It is unclear if the customers were retained because of the Three-Year Incentive or because they were attracted to the Reservation Payment, which was increased in 2014. The Company anticipates that retention rates will increase next year if the Reservation payment is increased to replace the Three-Year Incentive, because customers will want to take advantage of the larger in-year incentives. This is especially true for customers that provide DR capability but, due to poor performance, have been disqualified from the Three-Year Incentive program.



Annual DLRP MW Enrolled Breakdown

Annual DLRP Customers Enrolled Breakdown



3. COMMERCIAL SYSTEM RELIEF PROGRAM ("CSRP")

CSRP is open to participants in Zone J (predominantly the five boroughs of New York City) who can curtail load or bring on certain on-site generation to reduce their demand by a minimum of 50 kW individually, or to Aggregators/CSPs who aggregate greater than 100 kW of demand reduction with a minimum of 21 hour notice before a planned event. A Planned Event refers to the Company's request for Load Relief when the day-ahead forecasted load is at least 96 percent of the Company's forecasted summer system peak. In 2012 the program was expanded to allow participation by SC11 customers who can increase export load to the system during events.⁸

Like the DLRP, the CSRP includes both a Reservation Payment Option and a Voluntary Participation Option. Participants enrolled in the Reservation Payment Option receive monthly reservation payments of \$10 per kW per month. During Summer Capability Periods that include five or more Planned Events, the reservation payment increases to \$15 per kW per month beginning with the first month in which by the end of the month there have five or more cumulative Planned Events in the network. Payment for participation during Unplanned Events is \$6/kWh reduced during the event. The participant is required to respond to a CSRP Planned Event for a four-hour period, with the time of the event dependent on the participant location.

In addition to the Reservation payment, participants in the Reservation Payment Option receive a Performance Payment that is equal to \$1.00 per kWh reduced during an event. As described in Section 1, Reservation Payment Option participants can also receive a Three-Year Incentive payment if they successfully complete three years of participation. The participants in the Voluntary Participation Option do not receive reservation payments, but they do receive a higher Performance Payment of \$3.00 per kWh reduced during a Planned Event and \$10 per kWh reduced during an Unplanned Event.

CSRP has environmental and performance requirements, including a 20 percent cap on the program resources enrolled via the use of on-site diesel generators. Participating diesel electric generating equipment must have an engine of model year vintage 2000 or newer.

⁸ See Case 09-E-0115, Proceeding on Motion of the Commission to Consider Demand Response Initiatives, Order Adopting with Modifications Tariff Amendments Related to Demand Response Programs, issued and effective March 15, 2012, p. 8.

Enrollment by such generators is accepted on a first-come, first-served basis. All other electric generating equipment is limited to the following: natural gas-fired rich burn electric generating equipment that incorporates three-way catalyst emission controls; natural gas lean-burn electric generating equipment with an engine of model year vintage 2000 or newer; or electric generating equipment that has a NOx emissions level of no more than 2.96 lb/MWh.

CSRP Costs

Table 8 summarizes the costs, by component, associated with CSRP in 2015.

Component	Cost	Percentage
Customer Incentives	\$5,831,000	85%
Program Operation - Con Ed	\$312,100	5%
Program Operation - Vendor	\$346,500	5%
Program Marketing	\$227,200	3%
M&V	\$102,600	2%
Total Program Costs	\$6,821,200	100%

Table 8: CSRP Cost Components for 2015 Program Year⁹

CSRP Cost Summary

Total costs for CSRP during the 2015 program year were \$6,821,200, an increase of 26 percent over the 2014 cost of \$5,412,000. Despite a small decline in 2015 CSRP enrollment, program performance increased, resulting in higher customer incentive payments. Small increases in other cost components also contributed to total program cost increases.

Customer Incentives

Customer incentives consist of Performance and Reservation payments paid to customers for their participation and performance in events and tests. This year there was a test, but no actual events; voluntary customers are not tested. Table 8 below provides information about the 2015 CSRP test. In total, the Company paid \$5,831,000 (85 percent of total program costs) in 2015 CSRP customer incentives (Performance Payment plus Reservation Payments). In addition to Reservation payments, the Company may be required

⁹ Costs for November and December have been estimated.

to pay out the first Three-Year Incentive payment at the end 2016. As also requested for DLRP, the Company requested the elimination of the Three-Year Incentive in its September 24 Filing. If granted, the Company will pay out the Three-Year Incentive during the first quarter of 2016 with no additional Three-Year Incentive payments going forward. If the Three-Year Incentive will still be in effect in 2016, the Company estimates that \$6.2 million will be paid out for this purpose in 2016 for resources that started participating in 2016.¹⁰

Program Operation - Con Edison

Costs in this category include Con Edison staff salary and overhead associated with CSRP management and support. This includes, but is not limited to, work performed by program managers, specialists and marketing staff. Program staff salaries are recovered through O&M budget and via the MAC. Other program costs are recovered via the MAC. The costs associated with Program Operation were \$312,100 (five percent of total program costs) in 2015. Costs were calculated using a percentage of time allocated by staff and support personnel to CSRP activities, with their associated salaries, overheads and A&S costs.

<u>Program Operation – Vendor</u>

Costs in this category include expenses related to operating functions performed by Con Edison vendors. In addition, these costs include, but are not limited to, DRMS software implementation. These costs totaled \$346,500 (five percent of total program costs) in 2015.

Program Marketing

Marketing costs include costs associated with Con Edison led marketing initiatives required to inform and involve customers. These costs totaled \$227,200 (three percent of total program costs). This program's marketing cost component does not

¹⁰ This figure was determined by taking the product of the kW reductions realized by resources (limited to kW amount that was approved for enrollment), the Three-Year Incentive rate of \$10/kW per month and the number of months the resource has qualified for the Three-Year Incentive payment. Resources whose performance factor was less than 80% were excluded. Some resources were disqualified from getting paid the Three-Year Incentive in 2015 for poor performance and others may be disqualified in 2016. The \$6.2 million estimate assumes that all the resources that qualified for the Three-Year Incentive at the end of 2015 will still qualify at the end of 2016.

include Con Edison staff salary associated with time spent on marketing events and marketing material design, which is included in the Program Operation – Con Edison category.

Aggregators provide the majority of program marketing to attract DR program participants. The Company will continue to provide "background" customer education on the DR concept to support the third-party sales process as well as to inform customers about program rules.

Measurement and Verification

Costs included in this category are associated with projects completed by EE&DM's Measurement and Verification group, as well as various studies that have been completed. These costs totaled \$102,600 (two percent of program costs) in 2015.

CSRP Test and Event Performance

The purpose of CSRP is to incentivize customers to reduce their demand for energy when the day-ahead forecast exceeds 96 percent of the forecasted summer system-wide peak. Program participants are notified at least 21 hours before a peak load shaving event is scheduled to begin and are expected to reduce load, or increase export in the case of SC11 customers, based upon their pledged kW. Accordingly, one of the goals of the program evaluation is to determine whether participants are providing the pledged demand reductions or export increases. The CBL for the day of an event is the estimate of the customer's load level had there been no event. The difference between the CBL and the actual load is used to determine the achieved performance.

CSRP has four call windows during which customers are called upon to provide load relief during a CSRP event. The four call windows were introduced for the 2014 Capability Period to more closely align test and event reductions with historical network peaking times. The call windows are 11:00 AM to 3:00 PM, 2:00 P.M. to 6:00 P.M., 4:00 P.M. to 8:00 P.M., and 7:00 P.M. to 11:00 P.M. Customers enrolling as SC 11 participants are viewed as supply resources instead of DR resources and are now required to export load during the 2:00 P.M. to 6:00 P.M. call window regardless of their network's call window. If call windows overlap between New York Independent System Operator ("NYISO") and Con Edison DR programs,

customers and Aggregators are able to maximize the benefits from concurrent program activations. This is the time when the maximum benefit of DR is recognized, both generation and T&D benefit. Participants may be challenged in the event of consecutive call windows being activated by Con Edison and the NYISO. This would occur when a customer is located in a night-time peak distribution network but is also committed to respond to a day-time peaking NYISO call. Customers may be forced to decide on enrolling in either the SCR or the CSRP due to their limitations to reduce load for extended periods of time. Due to the relatively mild summers of 2014 and 2015, NYISO and Con Edison have yet to call concurrent events for SCR and CSRP.

Test Summary

Con Edison called a test event on July 21, 2015 for all call windows. The test event duration for each call window was one hour starting with the first hour of the call window. Approximately 136 MW were enrolled at the time of the test event and over 147 MW were reduced, resulting in an overall program performance factor of 107 percent. The performance factor increases to 111 percent when the SC11 is excluded. Although the performance is only over one hour as opposed to the four-hour call windows that participants would see in an actual event, CSRP demonstrated a strong performance factor. Similarly, in 2013 and 2014 the CSRP test event performance factors, including SC11 export customers, were 105 and 110 percent, respectively.

A summary of the test event results is shown in Table 9 below. Three of four call windows reduced above their respective pledge amount resulting in a performance factor above one for call windows 11 AM to 3 PM, 2 PM to 6 PM, and 4 PM to 8 PM.

Call Window	Test Hour	2014 Enrolled	2014 Reduction	2015 Enrolled	2015 Reduction
11 a.m. – 3 p.m.	11 a.m 12 p.m.	61 MW	63 MW	69 MW	79 MW
2 p.m. – 6 p.m.	2 p.m 6 p.m.	27 MW	31 MW	29 MW	30 MW
4 p.m. – 8 p.m.	4 p.m 5 p.m.	13 MW	16 MW	18 MW	19 MW
7 p.m. – 11 p.m.	7 p.m 8 p.m.	17 MW	18 MW	20 MW	19 MW

Table 9: 2014 Summary of July 21st CSRP Test*

*MWs enrolled are reflective of the amount approved at the time of the test or event.

Performance data shown in Table 9 is based on achieved MW performance, which captures the MW performance as seen on the system. This may differ from the load performance used to calculate participant payments, which is capped between zero and 100 percent of the customer/Aggregator's network pledged level. The performance data is used to calculate both a network performance factor for each customer/Aggregator and Aggregator network resource ("ANR") performance factors for accounts enrolled in the Three-Year Incentive program by dividing the performance achieved by the performance pledged. The performance factor is important as it is used to calculate payments and determine resource reliability.

Increased program growth in 2015 in the Reservation Payment Option resulted in an increase in the amount of MW reduction available for CSRP DR events. In 2014, CSRP had 119 operationally available MW and in 2015 that number increased to 149 MW, reflecting 25% growth.

Since there were no CSRP events in 2015, there were no calls for Voluntary Participation Option customers.

CSRP Measurement and Methodology

As with the DLRP, CSRP uses the CBL methodology to measure load reduction during all tests and events for both Reservation and Voluntary enrolled customers. Only seven percent of customers enrolled in the Reservation portion of CSRP elected to have their performance measured with the Average Day CBL, the remaining customer performance was measured using the weather adjustment calculation for the test and all events.

In 2014, Con Edison was approached by one of its participating Aggregators after the 2014 test event with concerns on how performance for CSRP test events is measured. The concern stemmed from the fact that CSRP is a heat driven program, so customers are enrolled based on their DR abilities on hot days, while test events occur on days with more mild temperatures. Without the additional cooling load available, customers may not be able to perform on a test event as they would during an actual event. In response to the Aggregator's concern, Con Edison evaluated the entire CSRP portfolio performance in 2013, the last year when there were actual CSRP events, and found that most customers performed worse during actual events than during test events regardless of how much hotter the actual event day was than

the test event day. As a result, changes to the CSRP test event performance measurement methodology are not warranted.

CSRP System Impacts

The goal of the Company's peak shaving programs is to reduce the level of network peak to reduce capital costs, with the associated benefit of reduced customer costs and improved reliability of service. While the peak shaving programs are in the early stages of development, as illustrated in Table 10 below, the Company continues to see growth in the impact of the programs on the network peaks. The achieved network impact has increased from 0.59 percent in 2013 to 1.10 percent in 2014 to 1.25 percent in 2015. The network impact increase is assumed to be due to more customer experience regarding how best to respond to DR events and the increased levels of incentive to act. Both of these reasons appear to have contributed to increased enrollment and stronger customer performance. Full performance data for all networks is presented in the appendices at the end of this report.

Call Window	Enrolled Reservation Payment Option	Reservation Payment Option Network Impact	Enrolled Voluntary Participation Option	Voluntary Participation Option Impact	Reservation and Voluntary Option Impact	Achieved Reservation Payment Option Impact
11 AM to 3 PM	69 MW	1.98%	4 MW	0.10%	2.08%	2.25%
2 PM to 6 PM	29 MW	1.90%	0.10 MW	0.01%	1.91%	1.92%
4 PM to 8 PM	18 MW	0.79%	0.03 MW	0.00%	0.79%	0.84%
7 PM to 11 PM	18 MW	0.46%	0.05 MW	0.03%	0.46%	0.43%
Total	133 MW	1.16%	4 MW	0.03%	1.20%	1.25%

Table 10: Summary of Enrolled Anticipated and Achieved Impact

Assessment of CSRP Program Growth

Although the number of customers and associated MW enrolled in CSRP dropped slightly from 2014 to 2015 the reliability of the MW improved. The table below shows how the operationally available MW (i.e., MW reductions demonstrated during events) increased by twenty six percent. This improvement in the reliability of the program is supported by the significant increase in customer and MW program retention. The CSRP customer and MW enrollment charts below show how customer and MW program retention increased 70 percent and 107 percent respectively from 2014 to 2015. The increase in program reliability is further supported by the small ratio of MW that left the program compared to the number of customers that left. Customers that provide a relatively large amount of load relief are staying in the program. In 2015 CSRP lost the fewest MW since 2011 and yet lost the most number of customers since 2011. Another reason operationally available MW increased even though enrolled MW decreased is that enrollments shifted significantly toward customers participating through the Reservation Payment Option versus the Voluntary Participation Option. Historically, customers enrolled through the Reservation Payment Option demonstrate high performance factors whereas customers enrolled through the Voluntary Participant Option demonstrate significantly lower performance factors. Since the performance factor of the Reservation Payment Option participants is higher, the growth in Reservation Payment Option enrollments offset the operational MW lost due to customers leaving the Voluntary Participation Option and yielded overall growth in the operationally available MW.

There are three potential sources of growth for CSRP enrollment – customers who participated in only DLRP and who will also enroll in CSRP, CSRP customers who will increase their 2015 pledged load reductions in 2016 and customers who have never participated in DR. As noted in this evaluation the Company continues to target all of these opportunities for growth with increased incentive levels, marketing, and program simplification.

Call Window	2014 MW Enrolled	2014 Operationally Available MW	2015 MW Enrolled	2015 Operationally Available MW	2015 vs. 2014 Change in MW Enrolled % Increase	2015 vs. 2014 Change in Operationally Available MW % Increase
11 AM to 3 PM	70	60	73	80	4%	33%
2 PM to 6 PM	30	26	29	31	(4%)	19%
4 PM to 8 PM	19	14	18	19	(5%)	36%
7 PM to 11 PM	27	19	18	19	(31%)	6%
All Networks	146	119	137	149	(6%)	26%

Table 11: CSRP Overall Enrollment by Call Window and System-Wide

The following charts quantify the subcomponents of enrollments. Each subcomponent was described in Section 2 of the report. This information helps to provide a general idea of the impacts of the incentive changes on the subcomponents of enrollments. It is evident that in 2015 CSRP experienced the best retention in customers and MW enrolled compared to any

other year indicating that the significant growth seen in 2014 yielded longer term customers. It is unclear if the increased retention rate was because of the Three-Year Incentive or because customers were attracted to the Reservation Payment, which was increased in 2014. The Company expects retention rates to increase further if the Three-Year Incentive is removed and the Reservation payment is increased, since customers will not want to pass up the more immediate revenue opportunity. Although CSRP saw strong growth in the number of new customers enrolled, growth fell short of expectations for the same reasons described above in the assessment of DLRP enrollment growth.



Annual CSRP MW Enrolled Breakdown



Annual CSRP Customers Enrolled Breakdown

As enrollment and performance continue to grow, the various benefits received from CSRP will continue to grow. Growth in available load reduction reduces the costs and environmental impacts associated with peaking generation, and load reduction resources become a larger driver of distribution system planning. The Company recognizes that additional enrollment growth is necessary for CSRP to have more substantial impacts on capital cost deferrals.

4. COMMERCIAL DEMAND RESPONSE THREE-YEAR INCENTIVE UPDATE

In 2014 Con Edison introduced a Three-Year Incentive payment structure for qualifying customers in both DLRP and CSRP programs and the ANR concept was introduced. An ANR is one or more customers that are grouped by an Aggregator for the purposes of calculating performance and for determining eligibility for the Three-Year Incentive. Each ANR has to demonstrate a performance factor above 80% in each of the three years in order to receive the bonus payment. The Three-Year Incentive pays \$5 per kW per month for DLRP and \$10 per kW per month for CSRP upon the completion of the three-year period.

The table below outlines how many ANRs enrolled in the Three-Year Incentive structure and the number that have been disqualified so far for poor performance.

Program	ANR Start Year	Number of ANRs*	Number of Customers	MW in ANRs	# of ANRs Disqualified	MW disqualified	% of ANRs disqualified	% of MW disqualified
DLRP	2014	255	321	86	114	27	45%	32%
	2015	380	411	125	223	81	59%	65%
Tota	ıl	635	732	211	337	108	53%	51%
CSRP	2014	168	175	67	44	22	26%	32%
	2015	212	234	68	71	19	33%	28%
Tota	ıl	380	409	136	115	41	30%	30%

Table 12: Three-Year Incentive Participation

*Number of ANRs that started the Three-Year Incentive that year.

Despite good participation in the programs (at the beginning of the 2015 Capability Period roughly 97 percent of MW enrolled in DLRP and CSRP were also enrolled in the Three-Year Incentive program), 53 percent and 30 percent of the ANRs have been disqualified in DLRP and CSRP respectively due to performance below the 80 percent threshold.

5. COMMERCIAL COST EFFECTIVENESS SUMMARY

Using the Company's cost effectiveness model¹¹ (this model was described in the Company's Supplemental Filing submitted to the Commission on February 10, 2014), the Total Resource Cost ("TRC") test for the commercial DR programs yields a result of 1.82 and \$250 million in net benefit over a 10-year period. In addition the Company evaluated the cost effectiveness of the program using the Utility Cost Test and the Ratepayer Impact Test which yielded benefit cost ratios of 1.39 and 1.38 respectively. Benefit cost ratios above 1.0 confirm that a program is cost effective.

The incentives were designed on a combined basis for CSRP and DLRP and the programs are being evaluated in the same manner.

The assumptions in the model are the same as those used in the Company's Supplemental

¹¹ The results of the separate REV BCA track will be incorporated into future program design and reporting as appropriate.

Filing, except for the following listed below:

- Regional Greenhouse Gas Initiative CO₂ cost of \$1.99 per ton with a compounded growth rate of 19 percent;
- Actual 2015 data for the model's initial enrollment for 2015 and 10 percent compounded growth per year for 10 years;
- Program costs updated with costs incurred in 2015;
- CSRP and DLRP overlap percentages updated based on 2015 enrollment overlaps; and
- 2015 NERA marginal avoided cost of capacity figures.¹²

6. SC 11 CUSTOMERS - EXPORT DEMAND RESPONSE

As required by the Commission's March 15, 2012 order, DR export capacity was accepted as load relief during peak shaving and contingency events in 2015. Only one SC 11 customer participated in the peak shaving program and the contingency program. That customer enrolled a total DR export capacity of 12.5 MW for peak shaving (a 14 percent increase over 2014) and 10 MW for contingency events (no change in enrollment compared to 2014). This resource was called to perform for the contingency program test and the peak shaving test. Performance was 54 percent for the contingency program test and 82 percent for the peak shaving test.

7. **NYPA**

As required by the Commission's February 16, 2010 Order Denying Petitions for *Rehearing and Addressing Petition for Clarification*, the Company is expected to include information in regard to NYPA's participation in the Company's DR programs.¹³

NYPA accounts are enrolled in DR through several different Aggregators. The following

¹² Case 15-E-0050, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc., Workpapers for Exhibit ____(DAC-3).

¹³ Case 09-E-0115, Proceeding on Motion of the Commission to Consider Demand Response Initiatives, *Order Denying Petitions for Rehearing and Addressing Petition for Clarification*, issued and effective February 16, 2010, p. 9.

summary includes all NYPA accounts enrolled in DR.

DLRP						
Program/Test Date	# of Accounts Enrolled	kW Enrolled	kW Reduced during Test	Performance during Test		
2013 DLRP Test 6.26.13	61	10,385	7,417	71%		
2014 DLRP Test 6.26.14	25	11,218	11,885	106%		
2015 DLRP Test 6.24.15	60	38,230	16,723	44%		

Table 13: DLRP Enrollments and Performance for NYPA Accounts

Table 14: CSRP Enrollments and Performance for NYPA Accounts

CSRP						
Program/Test Date	# of Accounts Enrolled	kW Enrolled	kW Reduced during Test	Performance during Test		
2013 CSRP Test 6.25.13	1	75	42	56%		
2014 CSRP Test 7.8.14	20	22,432	26,089	116%		
2015 CSRP Test 7.21.15	21	22,898	25,732	112%		

8. UPDATE ON METER DATA ACCESS

The Company's Meter Data Access Plan provides commercial customers with 15-minute interval data on a close to real time basis during the Company's DR events. This access is provided via the customer portal known as Curtailment Manager, which is in turn a sub-site of Con Edison's Customer Care website. The Customer Care website also allows customers to export their interval meter data in Green Button format.

The Company continues to work with the Curtailment Manager product, to check the speed and quality of the data enabled via this portal. The chart below explores how long meter data takes to come into Curtailment Manager after the fifteen minute interval has ended. The data is based on the 4 P.M. to 4:15 P.M. interval from the DLRP test event on June 24. This was the first interval of the test event. Overall 73.5 percent of meters communicated within fifteen minutes of the interval, 87.7 percent of meters communicated within four hours of the interval, and 99.2 percent of meters communicated within twenty four hours. The remaining meters did not communicate due to communications issues identified during the event. The communications issues were resolved after the event.



Time Delay For Curtailment Manager To Receive Interval Reading (16:00 -

9. COMMERCIAL PROGRAM CONCLUSIONS

Although growth in enrolled MWs was positive for DLRP and negative for CSRP in 2015 as compared to 2014, both programs grew in terms of operationally available MWs. This was fueled by increases the Reservation Payment Option for both programs as a result of an increase in incentives to the Reservation Payment Option.

Operation of the Commercial DR programs in 2015 had a unique challenge resulting from ANRs going into effect for the first time. As anticipated, ANRs complicated the enrollment and settlement processes for the Company and for the Aggregators. In light of the complications in program rules, the Company and the market handled ANRs successfully. The Company educated the Aggregators on ANRs and successfully updated its internal protocols and tools to manage enrollment and settlement processes.

In the 2014 Evaluation Report the Company discussed how it continues to work with Department of Public Service Staff ("Staff") and stakeholders to file program changes in a timely manner to allow adequate time for market education and for DRMS modifications. The Company filed program changes in September 2015 after having engaged Staff, Aggregators, and the DRMS vendor to fully explain the program changes and the implications for DRMS development. The proposed program changes are designed to further spur program growth and simplify the programs by removing the Three-Year Incentives (and by extension ANRs), increasing the

Reservation payments, removing the CSRP penalty, simplifying program rules and making program rules consistent between the two commercial DR programs. The Company has also proposed changes to improve program effectiveness. First, the Company has proposed to lower the CSRP event trigger criterion from 96% to 92% of the forecasted summer peak. This was driven by the fact that there were no CSRP events called in the last two summers. Secondly, the Company has proposed allowing voluntary customers to register at any time during the Capability Period.

To comply with the Commission's March 30, 2015 <u>Order Adopting Aggregator Eligibility</u> <u>Requirements with Modifications</u>, on September 1, 2015 the Company filed proposed Aggregator minimum capitalization requirements and operating procedures. The proposal aims to enhance market integrity while not creating significant barriers to entry for new Aggregators.¹⁴

The Company has worked with other New York State electric distribution utilities, NYISO and Staff to develop a backstop tariff that may be triggered if the NYISO is ordered by the Federal Energy Regulatory Commission ("FERC") to modify the way the NYISO currently administers its Installed Capacity Special Case Resources ("ICAP-SCR") program. Such modification may be required if the United States Supreme Court affirms the U.S. Court of Appeals for the D.C. Circuit's May 23, 2014 decision overturning FERC Order 745, FERC's generic order governing the treatment of demand response in ISO and RTO markets. The U.S. Supreme Court heard oral argument in the case in October, 2015. The Company has been closely monitoring the case.

There were no actual CSRP demand response events in the summer of 2015, since weather was relatively mild. The Company called 15 actual DLRP events across nine networks and one test event. The Company relied on test events to assess portfolio customer performance, which was generally in line with historic levels.

For 2016, the Company looks forward to a potentially new paradigm of demand response operation. This will result from a number of anticipated developments:

- New incentive levels and program rules resulting from the Company's September 2015 filing;
- 2. Aggregator financial eligibility criteria, if approved by the Commission; and

¹⁴ On September 14, 2015, the Commission issued its *Notice of Incorporation of Filing* in Cases 15-M-0180 and 13-E-0573 incorporating the Company's September 2015 filing into the DER Oversight proceeding

 Potential activation of the backstop tariff, requiring Company involvement in some level of bulk power-level demand response program administration.

10. DIRECT LOAD CONTROL PROGRAM ("DLC")

The DLC program is comprised of the Residential Direct Load Control Program ("Residential" or "Residential Component") and the Business Direct Load Control Program ("Business" or "Business Component"). The DLC program supports electric system reliability by using communication enabled (radio paging and Wi-Fi) thermostats to control participants' central air conditioning units and reduce energy demand at times of critical system need. Customers have the ability to remotely control their central air conditioning units online through a personal computer or mobile device at all times and thus to over-ride events the Company has called regardless of the customers' location. The DLC program has been offered in the Company's service territory since 2002.

Con Edison provides and installs, without charge to the enrolling business or residential customer, a thermostat with Internet-enabled technology that becomes the property of the customer. In addition, participants are given a one-time incentive of \$25 or \$50 for enrollment in the residential and business programs, respectively. As of the end of September 2015, approximately 25,000 customers were enrolled in the program, using 30,000 thermostats that can provide a total of 30 MW of peak load reduction (or operational capacity). At the end of 2014, there were 40 MW enrolled in the program. The Company removed 10 MW of non-communicating thermostats from the DLC program and projects that additional customers constituting approximately an additional 7.0 MW will be enrolled by year-end 2015 for an estimated total program enrollment of 37.0 MW. In 2015, DLC participants were active in five contingency events. These events took place on June 23rd, June 24th, July 19th, July 20th, and July 21st.

Additionally, to continue to implement the principles prioritized in Reforming the Energy Vision¹⁵ ("REV") proceedings, a Bring Your Own Thermostat ("BYOT") offering was

¹⁵ Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, *Order Instituting Proceeding*, issued April 25, 2014, pg. 1.

fully integrated into the residential program, from pilot stage, following approval by the Commission on August 1, 2014.¹⁶ The BYOT option allows customers to enroll a thermostat through certain service providers, or thermostat manufacturers, for a one-time sign-up bonus of \$85. The Company also offers a \$25 payment for participation in DR events. The customer is eligible for this payment after the Company can verify participation in at least 50% of events in the first three summers. This option offers customers choices with regard to thermostat equipment, flexibility, and control. In addition to increasing customer choice, BYOT leverages existing marketing executed by various thermostat manufactures and potentially removes barriers to DLC participation by customers who either already have an approved smart thermostat or are in the process of purchasing a smart thermostat. As of October 2015, the BYOT option had approximately 1,800 enrolled customers with a total of 2,900 thermostats that can provide approximately 3 MW of potential load reduction. The company projects approximately 3.5 MW enrolled by year-end 2015. In 2015 the BYOT program ran a total of 12 test events and three contingency events.

Program Technology Overview

Two-way Paging Thermostats

Since program inception the DLC Company installation option has exclusively utilized a two-way paging technology thermostat, with DLC events initiated through the manufacturer's proprietary system. While these thermostats are no longer available, the Company continues to maintain this system in an effort to avoid stranded assets and maintain DR capacity.

Wi-Fi Thermostats

The Company began installing Wi-Fi thermostats in 2013. The Wi-Fi thermostats connect to the customer's existing Wi-Fi router with no separate hardware needed. The Wi-Fi thermostats provide a more ubiquitous two-way communication source than the paging thermostats, which allows the Company to more accurately monitor DR event participation and

¹⁶ Case 14-E-0121, Tariff Filing of Consolidated Edison Company of New York, Inc. to modify Rider L- Direct Load Control Program contained in P.S.C. No. 10 – Electricity. *Order Approving Tariff Revisions* issued and effective July 25, 2014. The effective date was subsequently postponed to August 1, 2014, pg. 1.

verify load reduction. In March 2015, the Company was given approval by the Commission to begin replacing the existing two-way paging technology thermostats with Wi-Fi thermostats in an effort to maintain DR capacity. The Commission set a 2015 goal to replace 8,000 paging thermostats with Wi-Fi thermostats.¹⁷ As of the end October 2015, the Company had replaced 2,600 paging thermostats. The Company projects that it will replace approximately 3,200 two-way paging thermostat replacements by year-end 2015, approximately 40% of the goal in six months.

Behavior Modification/ Energy Portal to Encourage DR Event Participation

Simultaneously with the commencement of the installation of Wi-Fi communicating thermostats in 2013, the Company began engaging residential customers through a new platform. Con Edison provided a mobile application ("App") and energy portal, both offered customers energy savings tips to increase customer education and awareness through push notifications. The energy portal also provided energy coaching and behavioral modification messaging designed to help the customer save energy year-round and increase DR event participation. In late 2014, Company's vendor discontinued its behavior modification App and energy portal service offering but arranged with the vendor to continue providing the App and energy portal until November 9, 2015.¹⁸ However, Con Edison was able to collect energy efficiency data through the energy portal and an analysis of that data is provided below. Customers were migrated to a new platform and a new app in November 2015. This App does not provide behavioral coaching on energy efficiency.

Behavior Modification Impacts/ Energy Efficiency Study

A unique component of the behavior platform was that it encouraged customers to set energy efficient set points and the platform provided customers attempting to override participation in a DR event with persuasive messaging designed to encourage the customer to

¹⁷ Case 15-E-0012, Petition of Consolidated Edison Company of New York, Inc. for Approval of Changes to Residential Demand Response Programs, *Order Modifying Residential Demand Response Programs*, issued and effective March 27, 2015, pg. 6.

¹⁸ There we no cycling events in 2014 but the Company wanted to complete a study of the behavior modification impact from the behavioral App. As a result, the Company arranged to delay discontinuing the behavioral App and energy portal and the deferral of the migration allowed for that study.

continue to participate in the DR event. On average, customers updated their schedule fourteen times per year and overrode their set point 79 times per year. During each of these interactions, customers were coached to use the most efficient set point.

Based on the analysis conducted by the Company's contractor, the App and energy portal provided the following information:



Con Edison estimates that it has helped customers save 224 MWh during the period of October 2013 to May 2015. This measurement is based on a State and Local Energy Efficiency Action Network¹⁹ approved methodology and is regarded as a robust measurement approach when experimental design is infeasible.²⁰ The methodology uses propensity score matching to develop a synthetic control group of customers who are statistically equivalent to the group of customers who have installed smart thermostats with the behavior software. The two groups are then compared using regression analysis to measure the difference in post-installation usage between installations and a control group of highly similar homes.

¹⁹ https://www4.eere.energy.gov/seeaction/.

²⁰ Imben, G. W., & Rubin, D. B. (2015), *Causal Inference for Statistics, Social, And Biomedical Sciences.* New York, NY, Cambridge University Press.
Of the 3,425 thermostats installed with the behavior platform, 2,696 or 79 percent had the requisite 12 months of pre-treatment data to perform proper matching and develop a synthetic control group. For these customers, measured savings equaled 0.27 kWh per customer per day (p-value = 0.049) across the 831,000 measured customer days in the program. The 224 MWh savings is likely a lower bound of savings because this figure only includes measured savings for the 79 percent of the population that had the requisite 12 months of pre-treatment data. The graph below highlights that 91 percent of the energy efficiency savings took place during the warmest six months of the year, when Con Edison customers were most likely to be using their air conditioning.



Calculated Energy Savings by Customers

Program Marketing

The Company continues to use a strategic, analytical based, targeted marketing approach, which began in 2013, to recruit participants into the DLC program. The strategy has sustained a significant increase in residential customer enrollment. As seen in Table 15 below, the Company

achieved a 1.33 percent penetration rate; the rate is on par with the Company's expectations and in-line with the marketing penetration rate from last year.

2015 Estimate								
Campaign	Pieces Sent	Leads	Penetration	Cost	Cost per Lead			
Residential Mail	387,189	3,007	0.78%	\$170,792.20	\$56.80			
Business Mail	26,283	49	0.19%	\$18,351.50	\$374.52			
DERE Residential Mail	36,405	4,513	12.40%	\$78,352.00	\$17.36			
DERE Commercial Mail	10,981	707	6.44%	\$7,708.00	\$10.90			
Res EE Cross promotional Direct Mail	200,000	500	0.25%	\$0.00	\$0.00			
Total All Mail Campaigns	660,858	8,776	1.33%	\$275,203.70	\$31.36			

Table 15: DLC Marketing Efforts

*Costs associated with Cross-Promotional Emails cannot be determined as they are part of the Company's overall awareness campaigns to customers.

The Company continues to employ a strategic marketing database platform to drive all aspects of customer recruitment and engagement. The focus on data-driven marketing is the key reason for the current marketing success. Predictive models help the program by optimizing marketing campaigns, prioritizing customer segments, and predicting future response rates. Reducing the audience size to those customers who would qualify for the program and have a higher probability to respond translates into reduced marketing expense and increased customer satisfaction scores.

These predictive solutions help the Company know who to target, what to say, and when and where to invest marketing dollars in order to achieve a desired customer reaction. This targeted marketing is informed by insights gained from segmentation and other means, and further driven by several areas of advanced analytics including predictive modeling, customer value identification, and forecasting.

The chart above summarizes the program's marketing results, which was deployed in 2015.

DLC Program Costs

As indicated in Table 16 below, the total program costs incurred in 2015 are expected to be under the \$12.7 million allocated budget. While the Company's internal program

management costs are not funded through the MAC and are not included in the budget, they are included in the TRC benefit cost analysis.

DLC Program Cost 2015						
Component	2015 Estimated Costs*	Percentage				
Program Implementation Vendor / Other	\$4,743,640.70	60%				
Program Equipment	\$2,585,248.01	33%				
Program Marketing	\$428,950.63	5%				
Customer Incentive	\$193,000.00	2%				
Total Costs	\$7,950,839.34	100%				

Table 16: DLC Program Costs 2015

*Includes estimated costs for Oct. - Dec. 2015

<u>Program Implementation – Vendor/Other</u>

Costs in this category include expenses related to program operations and management functions performed by Con Edison's vendors. The costs in this category were \$4,743,640.70.

Equipment

Program equipment costs refer to the thermostats, equipment related to installing the thermostats, website hosting, and communication fees. The costs in this category were \$2,585,248.01.

Program Marketing

Marketing costs include all costs associated with the marketing initiatives required to inform and involve customers in the program. These costs include, but are not limited to, program literature, direct mailings, website development, and promotional events. The costs in this category were \$428,958.63.

Customer Incentives

Customer incentives consist of all payments to customers for program participation, based on the program design. Costs for this category were \$193,000.

Program Administration - Con Edison

Con Edison's costs include, but are not limited to, Con Edison employees, including a program manager and a program specialist, as well as an estimate for program marketing, legal,²¹ and market research staff. As these costs are embedded in base rates, and not directly collected as part of the DLC program costs, they are not included in the program costs presented. However, these costs are included in the TRC analysis for this program.

Challenges/Legacy and Non-Responsive Thermostats

One of the biggest challenges to the DLC program remains the replacement of two-way paging legacy thermostats, many of which have become non-responsive thermostats ("NRT"). The Company defines a NRT as one that has not communicated for 90 days. Every six months the Company removes the non-communicating thermostats from the program. Nevertheless, the number of NRTs continues to grow. The issue is further complicated by the fact that the paging communication system is quickly becoming obsolete and communications vendor is seeking to discontinue service.

In its March 25, 2015 order in this proceeding,²² the Commission gave the Company permission to replace 8,000 legacy thermostats by the end of 2015. The Company commenced an aggressive marketing campaign to engage customers in an effort to comply with the Commission's order. The campaign gained momentum at the end of July 2015. As previously stated, as of October 2015, 2,600 legacy thermostats have been replaced. An additional 600 are expected to be replaced by year end for a total of 3,200. Given that legacy replacements gained momentum in July, the 3,200 projected total is on par with a goal of replacing 8,000 thermostats per year.

²¹ Legal costs include, but are not limited to, advertising associated with regulatory filings.

²² Case 15-E-0012, Petition of Consolidated Edison Company of New York, Inc. for Approval of Changes to Residential Demand Response Programs, *Order Modifying Residential Demand Response programs*, issued and effective March 27, 2015, p. 8.

Con Edison has retained call center services for both residential and business DLC customers. The call center services, include, but are not limited to, helping customers apply for the DLC program, answering scheduling questions, and handling incentive check inquiries. The call center is available 24 hours a day, seven days a week. For 2015, the Company estimates that approximately 35,700 calls will be received. In addition, the Company estimates the call center will make over 28,900 outbound calls by the end of the year for telemarketing and scheduling installations. Year to date, the Program's call center has enjoyed high service levels. It has experienced its highest call volume in program history and has achieved a weekly average service level of 94 percent.

Customer Satisfaction

Telephone surveys were conducted in February and March 2015, using sample records for the 2014 calendar year participants. Qualified respondents were involved in the decision to participate in the program. The survey utilized a one to five Overall Satisfaction Scale and considered a customer as satisfied if it gave the program a satisfaction score of "four" or "five." Key outcomes of the 2014 survey include:

- A wide majority of those surveyed report being satisfied with the program (83 percent Residential and 77 percent Business, up from 78 percent Residential and 69 percent Business in 2013);
- The most common reasons to participate in the program were the free thermostat (30 percent Residential and 19 percent Business) and the ability to manage energy use (36 percent Residential and 46 percent Business). "To program thermostat using the Internet" is new to the top mentions in 2014 amongst Residential participants (23 percent up from 13 percent in 2013).

DLC Cost Effectiveness Summary

DLC TRC Test

The 2015 DLC program was cost effective based upon the Company's application of the Freeman, Sullivan, and Co. TRC test.²³ In order to perform the TRC analysis, the following assumptions were made:

- The analysis includes actual benefits and costs from January through September 2015 and estimated figures for the months of October, November, and December 2015.
- Thermostats are estimated to have a 10-year lifespan.²⁴
- The benefits and costs of the program were calculated over 10 years for thermostats installed in 2015.
- Attrition rates for both Residential and Commercial components of approximately 1 percent and 7 percent, respectively, are included.
- TRC calculations include administration, implementation, maintenance and marketing costs. Installation costs were calculated using 2015 adjusted installation and equipment costs. Maintenance costs were calculated using 2015 operation and maintenance costs for all active thermostats as well as estimates of operation and maintenance costs for the remaining life of all active thermostats.
- The benefits for the TRC calculation included capacity and distribution benefits derived from the NYISO Summer Strip Auction²⁵ and 2015 Marginal Cost Study,²⁶ respectively.

²³ Freeman, Sullivan & Co., *Cost-effectiveness of CECONY Demand Response Programs*; Prepared for Consolidated Edison Company of New York; November 2013.

²⁴ Wi-Fi Programmable Controllable Thermostat Pilot Program Evaluation: *Part of the Massachusetts 2011 Residential Retrofit and Low Income Program Area Evaluation*. Prepared by The Cadmus Group, Inc./Energy Services; September 2012

²⁵ NYISO, Summer 2015, Strip Auction Results for UCAP, Auction Starting 05/2015, , (http://icap.nyiso.com/ucap/public/auc_view_strip_detail.do) – Accessed: 11/11/2015.

²⁶ Case 15-E-0050, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc., Work papers for Exhibit ____(DAC-3)

Table 17: DLC Cost Effectiveness

Total Resource Cost Test				
Benefits	\$18,439,077			
Costs	\$7,693,101			
Net Benefits	\$10,745,977			
Benefit Cost Ratio	2.4			

BYOT Total Resource Cost Test

Assumptions for the BYOT TRC are similar to the Company-Provided Thermostat model. Additionally, costs include the net present value of the ten-year customer incentives and vendor fees associated with the thermostats installed in 2015.

As in previous years, the Company determined that the DLC and the BYOT programs were cost effective based on the TRC test.

Table 18: BYOT Cost Effectiveness

BYOT Total Resource Cost Test				
Benefits	\$3,097,288			
Costs	\$685,395			
Net Benefits	\$2,411,892			
Benefit Cost Ratio	4.52			

Risk Factors

The DLC program with new enrollment options and new technologies presents potential risks, which may impact cost effectiveness in subsequent years. The risks are:

- The Wi-Fi communication technology is reliant on the customer's Wi-Fi, compared to the paging technology that relied on the Company's maintenance. Therefore, if the customer moves or changes its router password, the program will lose a DR resource and attrition will increase.
- Greater access to the thermostat through a mobile device will give the customer improved control and may lead to increased override rates.
- For the BYOT option, each thermostat manufacturer has different demand reduction strategies, which may affect the reduction per thermostat. Table 20 below shows the different strategies used by the various vendors.

DLC Test and Event Performance

The 2015 summer season was relatively mild within the Con Edison service territory. Con Edison called seven DR events during this program period, with five of those occurring on July 20 and the other two occurring on July 19 and 21. In addition, one test event was initiated on June 24, 2015.

I abic I	2. Summar				
Date	Zone	Network Name	Event Time	# Participating Stats	Avg. MW
24-Jun	All Zones	Test - All Networks	4:00PM - 5:00PM	22135	12.674
19-Jul	J	Fox Hills	6:30Pm - Midnight	1917	0.689
20-Jul	J	Richmond Hills	6:00AM - Noon	364	0.152
20-Jul	J	Fox Hills	2:00PM - 8:00PM	1771	1.182
20-Jul	J	Fresh Kills	2:30PM - 9:00PM	2339	1.391
20-Jul	J	Harrison	4:30PM - 11:00PM	1103	0.65
21-Jul	J	Fox Hills	2:00PM - 8:00PM	1947	0.81

Table 19: Summary of DLC Test & Events

The 2015 event book further detailing all program events is attached as Appendix F.

BYOT Test and Event Performance

In 2015 the BYOT option had three program partners (Honeywell, NEST and EnergyHub) that participated in test and contingency events. These events took place on following dates:

Date	Hours	Type of Event	Forecast High Temp.	Vendor	Network	Enrolled Thermostats on Event Date in Applicable Networks	Participating Thermostats	Average kW Reduction per Device
12-May	1pm-5pm	Test	88	EnergyHub	all	67	10	NA*
12-May	1pm-5pm	Test	88	Honeywell	all	290	NA*	NA*
12-May	1pm-5pm	Test	88	Nest	all	1468	935	0.57
23-Jun	12pm- 4pm	Test	92	EnergyHub	all	81	13	NA*
23-Jun	12pm- 4pm	Test	92	Honeywell	all	308	296	0.148
23-Jun	12pm- 4pm	Test	92	Nest	all	1634	1399	0.88
19-Jul	6:49pm- Midnight	Contingency	90	Honeywell	SI Fox Hills	3	NA*	NA*
20-Jul	4pm-8p	Contingency	92	Nest	SI Fox Hills	32	NA*	NA*
21-Jul	7pm- 11PM	Contingency	91	Nest	WC Harrison	160	NA*	NA*
21-Jul	5:30pm- 9:30pm	Test	91	Nest	all	1810	1588	0.81
21-Jul	5:30pm- 9:30pm	Test	91	EnergyHub	all	76	17	NA*
21-Jul	5:30pm- 9:30pm	Test	91	Honeywell	all	318	265	0.238
17-Aug	5:30pm- 9:30pm	Test	90	Nest	all	2000	1928	0.62
17-Aug	5:30pm- 9:30pm	Test	90	EnergyHub	all	89	20	NA*
17-Aug	5:30pm- 9:30pm	Test	90	Honeywell	all	338	NA**	NA**

NA*- Not enough participation to yield statistically significant results NA** - Event signal not received by vendor

As of the end of September 2015, NEST thermostats comprised approximately 80 percent of the BYOT program enrollment. The other thermostat manufacturers did not have a statistically significant number of participating thermostats at the time of certain events. The table below shows the various strategies employed by the manufacturers to reduce demand.

Vendor	Demand Reduction Strategy
Nest	Nest leverages a customized approach to DR, which is unique to each home. Based on the envelope of the home, functionality of cooling equipment and customer preferences, Nest uses a combination of A/C cycling and temperature offsets to maximize load reduction.
EnergyHub	Con Edison implemented temperature offset events of configurable duration, with an optional pre-cool period of up to 90 minutes, and an option to set a temperature ceiling. The strategy includes opt-out events, with a 5 degree offset and a temperature ceiling of 92 degrees F. The events lasted for four hours, the time of day varied from afternoon to evening across events.
Honeywell	The Honeywell thermostat is sent a signal which turns the compressor off but, still allows the fan to run. Typically a compressor will be set to run every other 15 minutes for the desired length of the event. This is considered a 50% cycling event as the compressor runs 50% of the hour.

Table 21 Demand Reduction Strategies by Vendor

Program Attrition

Customers leave the program or choose to have their thermostats removed for a variety of reasons. For example, a thermostat that stops communicating with the system for an extended period of time is assigned a NRT status as described above. In these instances, the DLC program administrator undertakes efforts to contact the customer to determine why the thermostat is not communicating. If the administrator is unable to contact the customer after multiple attempts, the customer is classified as a "Dropout," and is included in the attrition calculation (described below). If one of these Dropout customers calls the call center for assistance, and the communication problem can be resolved, the thermostat is reactivated and returned to active status in the program.

When the program administrator is able to make contact with a customer whose thermostat has been categorized as an NRT, the administrator may be determined that the customer had the thermostat removed by the customer's own contractor without notifying the program administrator or Con Edison. In these cases, the thermostat and customer are noted as Removals. Although the thermostat is the customer's property, whenever possible, the implementation vendor removes the DLC thermostat, with the customer's approval, and it is replaced with a lower cost simple thermostat or one provided by the customer. The Program thermostat is either recycled back into the Program or disposed of properly. Table 21 below, summarizes program activity regarding attrition.

The Company projects that 2,024 residential and business thermostats will be removed from the program in 2015, resulting in an attrition rate of 4.74 percent. The increase in attrition is directly tied to the number of paging thermostats no longer communicating and thus removed from the program.

DLC 2015-2016 Program Attrition

Attrition rate is calculated by dividing the current year's removals, as of September 30, 2015, by the total active thermostats on December 31st of the prior year. Because the Wi-Fi thermostats represent newer customers and had a very low installation value on December 31, 2014 coupled with an aggressive installation period in 2015, the attrition percentage appears high. Additionally, a drawback of the Wi-Fi technology is that the thermostat will lose communication ability if a customer changes a router password, internet service provider, or the occupant changes, unless the customer takes an action to repair it to maintain communications. The older technology did not rely on customer equipment so a changing of a password, changing of an internet service provider, or a transient population had no impact.

Paging - Legacy					
Activity	Residential	Commercial			
Dropouts	165	53			
De-Installs	953	518			
Total Thermostat Removed	1118	571			
Attrition Rate	3.92%	5.64%			
N	/ifi				
Activity	Residential	Commercial			
Dropouts	90	9			
De-Installs	123	12			
Total Thermostat Removed	213	21			
Attrition Rate	5.61%	7.98%			

Table 2	22:	DL	С	Program	A	Attrition	۱¥
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Combined					
Activity	Residential	Commercial			
Dropouts	255	62			
De-Installs	1076	530			
Total Thermostat Removed	1331	592			
Attrition Rate	4.12%	5.70%			

*Includes estimates for September through December

DLC Program Summary

The DLC program has had a successful year. The new installations for the Residential Component will surpass its goal of 3,000 installed thermostats and for the first time in five years, as a result of coordination with the Energy Efficiency Small Business Program, the Small Business Component of DLC will meet its 500 thermostat new installation goal. The Residential Component is expected to install approximately 5,800 new thermostats, 65 percent above goal, by end of 2015. The de-installations and re-installations of the legacy communicating thermostats with Wi-Fi communicating thermostats is on track to install approximately 3,200 thermostats, which is 40 percent of the 8,000 ordered by the Commission in its March 2015 Order. The Program has gained momentum and expects to replace at least 8,000 legacy thermostats in 2016 with a full year to accomplish the work. The Program continues to experience an excellent response to its marketing campaigns and has seen a 16% response to its direct mail regarding replacement of legacy thermostats.

The BYOT option of the program continues to grow its enrollment and increase its number of thermostat providers. The BYOT option expects to see a significant increase in enrollment prior to the holiday season and reach approximately 3,400 thermostats. The demand reduction per thermostat varies based on the manufacturer and its respective demand reduction strategy. The Company will continue to monitor and study the baselines and demand reduction strategies used by the manufacturers. Also, as discussed in the 2014 Annual report, the Company used behavior modification to coach customers on energy efficiency. According to the analysis conducted by the Company's vendor, an efficient setting on the thermostat resulted in increased energy savings for the customer. Based on the data collected, the Company believes that the savings calculated were conservative.

11. RESIDENTIAL SMART APPLIANCE PROGRAM ("RSAP") EXTENSTION

RSAP was originally approved in 2009 as a pilot intended to extend DR offerings to a broader residential population through the integration of "smart" curtailable appliances.²⁷ The concept was that participants would receive a rebate for each smart or DR-ready appliance installed and, in return, the Company could curtail appliances as needed during system critical conditions. Since market availability and the adoption of smart appliances were slower than anticipated, the Company explored alternative strategies to connect with customers' homes.

- Between 2010 and 2012, the Company targeted RSAP to 300 customers with Automated Meter Reading ("AMR") meters and implemented a Tendril home area network ("HAN") solution. This proved cost prohibitive to test at a larger scale.
- In 2011, as part of a research and development ("R&D") initiative, the Company
 partnered with a vendor to jointly develop a prototype technology to enable customers to
 remotely operate and monitor their room air conditioner ("RAC") via the internet. The
 Company was able to use the technology to remotely turn off (or "cycle") RAC loads
 either on command or in response to ambient room temperature. The technology (the
 "SmartAC kit") consisted of a ZigBee²⁸ to USB internet-connected plug control device
 ("the modlet") with a thermostat control. A major drawback of this early version was
 that it required the customers' computers to remain on at all times in order for the RAC to
 be controlled and monitored remotely. A 500 RAC proof of concept pilot was conducted
 in a master-metered building.
- In March of 2012, the Company received Commission approval and funding to expand the 2011 proof-of-concept pilot as an extension of RSAP.²⁹ The Company branded the SmartAC based DR Program "CoolNYC" and deployed 10,000 RAC Modlets to 3,916

²⁷ Case 09-E-0115, Proceeding on Motion of the Commission to Consider Demand Response Initiatives, *Order Adopting in Part and Modifying in Part Con Edison's Proposed Demand Response Programs*, issued and effective October 23, 2009.

²⁸ ZigBee is a communications protocol, often used in home automation applications, for sensors and networks requiring low data transfer and low power consumption.

²⁹ Case 09-E-0115, Proceeding on Motion of the Commission to Consider Demand Response Initiatives. *Order Adopting in Part and Modifying in Part Con Edison's Proposed Demand Response Programs*, issued and effective March 15, 2012.

customers, largely through mail distribution.³⁰ The devices distributed included both first generation and an improved second generation modlet with a ZigBee to Ethernet Gateway interconnection. The Gateway interconnection eliminated the need for customers to keep their computers on at all times to remotely control and monitor their RAC.

- In April 2013, the Commission approved and funded \$4 million over two years for CoolNYC to continue as a pilot with the goal of continuing to refine the product offering while remaining open to other technology options.³¹ This translated into the deployment of an additional 10,000 SmartAC kits during 2013 and 2014 with the objective of increasing the impact and reliability of the RAC load as a DR resource. The Program introduced a variety of improvements, including: 1) a third generation Wi-Fi SmartAC kit which is easier to install and connects directly to the internet via the customer's home router; 2) machine-learning DR platform software to enable the vendor to custom-tailor DR events based on learned customer preferences; 3) an installer-based distribution method for devices; and 4) two new pilot initiatives to improve DR participation and expand the program offerings, including "gamification" to further engage customers during DR, and the integration and testing of one manufacturer's "smart" web-enabled RAC appliance into the DR platform and program – a Bring Your Own Device ("BYOD") model.
- In March 2015, the Commission approved CoolNYC as a fifth-year pilot, with a \$6.8 million budget to fund a mass expansion of the program as well as allow flexibility for testing new DR strategies in a market that was now more accommodating to the technology and behaviors that enable demand response.³² The Company set out on an objective to grow the coolNYC customer base with an additional 15,000 smartAC kit devices and to re-engage the 10,000 devices deployed in 2013 and 2014. The Company

³⁰ Under the brand "CoolNYC," the Company provides participants with a free "Modlet" device to enable window air-conditioning units to respond during DR events.

³¹ Case 09-E-0115, Proceeding on Motion of the Commission to Consider Demand Response Initiatives. *Order Adopting in Part and Modifying in Part Con Edison's Proposed Demand Response Programs*, issued and effective April 19, 2013.

³² Case 15-E-0012, Petition of Consolidated Edison Company of New York, Inc. for Approval of Changes to Residential Demand Response Programs, *Order Modifying Residential Demand Response Programs*, issued and effective March 27, 2015.

also sought to diversify the portfolio for DR-enabled smart appliances by expanding the BYOD model that was piloted in 2014 and engaging customers with packaged thermal air conditioners ("PTACs") that are compatible with a plug controlled such as the smartAC kit. Based on changed projections in product availability and market readiness, RSAP adjusted its BYOD goals from 10,000 to 3,000 devices. Other 2015 RSAP objectives included testing gamification, behavioral, and customer engagement strategies to improve DR participation and year over year program loyalty.

Program Improvements

Enrollment Model

In prior years, customers enrolled in coolNYC and received smartAC kit devices for free. The program was historically challenged with getting customers to set up these free devices; hence, the introduction of a large installation effort in 2014. The 2015 program was committed to: (1) enrolling quality customers, i.e., ones who will be actively engaged in DR; (2) increasing first year setup rates and year over year re-setup rates; and (3) reducing overall program costs.

In 2015, coolNYC enrolled customers through three main participation channels: "Buy It", "Try It" and "BYOD".

- The "Buy It" channel required a customer to pay market price for smartAC kits and then enroll them into the program.
- The "Try It" model, offered the smartAC kit to a customer to try for free with an opportunity to earn and keep the device if the customer met the program participation requirements.³³ As part of enrollment, customers were required to submit their credit card information. Customers who did not meet the program requirements were asked to return their devices to avoid being charged.

³³ 2015 Participation requirements included:

^{1.} Set up devices and get connected online within 21 days of receipt of device; and

^{2.} Participate in at least 3 DR events (without opting out).

• Bring Your Own Device (BYOD), much like in 2014, provided customers who purchased a smart Wi-Fi enabled AC an opportunity to enroll and participate in DR and earn rewards.

To date, in 2015, the program enrolled 9,797 smartAC kit devices (5,647 customers) and 293 BYOD devices (248 customers): an outstanding 10,090 gross total device enrollments (5,890 customers) representing the highest number of enrollments in coolNYC in a single program cycle. Of these, 2,156 smartAC kit devices were returned³⁴ by the end of the program cycle, resulting in a net total enrollment of 7,934 devices (4,513 customers). Of total enrolled devices, approximately 74 percent were new devices and 26 percent returning devices. Of new devices, the majority (approximately 98 percent) were smartAC kits and 2 percent BYOD devices. Almost all of the new smartAC kits enrolled in 2015, participated via the "Try it Model," with only 19 devices being purchased in the competitive market.

Installation

During 2014, the use of installers and the collection of credit card information at signup greatly improved the percentage of SmartAC kits set up. In 2015, devices were distributed to customers entirely via the mail with the goal of: (1) continuing to increase device set up rates, while (2) reducing program costs, (3) increasing customer engagement with the technology, and (4) growing the program.

The 2015 program was able to eliminate the need to install devices on behalf of the customer and implement a successful mail distribution operation by leveraging the following: (1) the Try It program model which refined its eligibility criteria to select a population of participants capable of installing their own devices and which required a commitment from customers to participate in the program in exchange for receiving the devices for free; (2) the introduction of coolPoints which rewarded customers instantly for setting up and using devices; (3) the automated eligibility approval process which reduced the amount of time to verify

³⁴ Returns are devices sent back due to customers no longer interested in participating in the program as well as devices returned because, based on program rules, the customer did not earn the device and thus was not allowed to keep it.

whether a customer qualified for the program; and (4) improved technical customer service via phone and online tools which addressed the majority of customer questions on set up.

This self-install strategy resulted in a set up rate of 74 percent of gross enrollments and 95 percent of net enrollments.

Incentives

In previous years, customers received a single \$25 rebate at the end of the program as a thank you for participation. In 2014, the program tested gamification of performance incentives during a DR event, which appeared to benefit DR performance numbers. In 2015, RSAP introduced an online and mobile App accessible rewards platform called "coolPoints" to introduce gamification strategies into other program components. coolPoints were earned in increments of 1,000 points (\$1 equates to 1000 points) and are instantly redeemable for online gift cards. The program allocated a budget of no more than 25,000 points (or \$25) on average rewarded per customer for device setup and DR participation. This budget structure inherently reduced incentive levels from prior years. Additionally, the program anticipates that there will be points left unredeemed by their end of year point's expiry date, an inherent cost savings.

The goal of the coolPoints incentive matrix was to reduce program costs and to improve the success rate of each program milestone by rewarding customers with points for each positive action taken. The Company observed that the points were able to be used to: (1) generate enrollments via friend referrals; (2) achieve both high device set up rates and DR participation (DR event participation³⁵ was consistently high, on average at 70 percent³⁶ across the four test events); (3) engage customers and their friends and family in a fun and interactive way; and (4) reduce program incentive costs.

Customer Engagement

RSAP 2015 reached customers via a variety of marketing channels, including: social media, email, television and radio, and traditional advertising. The goal was to utilize messaging strategically to educate customers on reducing power during the summer peak and to attract and

³⁵ Event participation is calculated as the number of devices participating in events out of the number of devices set up at the time of an event. ³⁶ Event participation was 70%, 71%, 69% and 70% for events 1 to 4, respectively.

retain quality enrollments who are engaged in DR. Themes emphasized include: helping the community through grid reliability and getting connected with controlling devices via mobile devices for enhanced convenience, control and choice.

RSAP 2015 also initiated a crowd weaving³⁷ customer panel project as a customer engagement strategy. Customers were posed with the challenge of designing their own DR program, focused on reducing power during the summer peak. The project generated 65 ideas that centered around 4 repeating themes: Rewards, Education/ Awareness, Year-round/ Comprehensive Programs and Community/ Social Interactions. The winning idea "Take the Challenge" reflected the themes around earning rewards and having more comprehensive, yearround programs. The general conclusion from this exercise was that customers felt a need to be reminded and inspired to conserve energy generally and also at the times the utility needs it most. RSAP also conducted a customer survey which informed the program about customers' needs for convenience around pets at home, family at home during the week, willingness to participate in "pledge" type behavioral demand response efforts and a desire for more easy-to-do tips and tricks during peak demand.

Program Costs

The following table is a breakdown of the realized and anticipated projected costs associated with the RSAP program in 2015.

Component Realized & Forecasted	Cost
Incentives	\$72,105
Administrative	\$1,397,939
Equipment	\$1,080,000
Marketing	\$223,000
Total	\$2,773,044

Table 23: RSAP Program Costs

³⁷ Crowd weaving is a form of stakeholder engagement research/ ideation that allows the researcher to present a question, concept or idea to a community, who in turn builds out the concept with their own ideas and also contributes to the development of other participants' ideas, resulting in a multi-sourced solution. The winning solution is established through a participant vote.

Incentives

For the 2015 program year, 4,173 customers earned incentives equivalent to \$72,105 in "coolPoint" incentives for setting up devices, referring friends to the program, and participating in demand response events. To date, 629 customers have redeemed "coolPoints" worth \$12,857. Customers can continue to redeem their "coolPoints" until December 31, 2015. Points not redeemed by then will expire as per the Program Enrollment Terms & Conditions, and the value of unredeemed points will reduce the anticipated program cost.

Administration

The program administration cost includes expenses associated with coolNYC Program implementation. Costs include reporting; program, operations, and IT management; data analysis; customer service; shipping and fulfillment; warehousing; device hosting; web, server, mobile setup; rewards platform development; security; and BYOD integration.

<u>Equipment</u>

The program secured 15,000 smart AC kits for the 2015 program operation.

<u>Marketing</u>

Marketing costs include costs associated with the marketing initiatives required to inform and involve customers in the Program. These costs include design and printing costs, public relations, and social media campaigns.

DR Test Performance

The 2015 program administered four test events. Results for the individual events are shown below. The test events included a methodology with three different temperature offsets applied to customers.

Event Date	Method	Outdoor Temp.	Average Aggregate Reduction (W/AC)	Modlets Online	Average kW Reduced	Customers Participating
6/24 Wed 7-8pm	+3, +5, +7	83°F	134	1,738	232	930
7/20 Mon 9-11pm	+3, +5, +7	94°F	184	2,891	533	1,660
7/29 Wed 7-11pm	+3, +4, +5	94°F	83	3,132	260	1,799
8/18 Tues 7-11pm	+3, +4, +5	90°F	81	4,948	403	2,945

Table 24: RSAP Test Event Performance:

Jur	ne 24, 7pm to 8p	om Cohort		Average load reduction per AC (W)					
	+3°F		121						
	+5°F		97						
	+7°F		178						
Cohort	Total Customers	Total ACs	Cust Opte	omers ed Out	ACs Opted Out	% Customers Opted Out	% ACs Opted Out		
+3°F	318	636		12	50	4%	8%		
+5°F	248	505		15	45	6%	9%		
+7°F	364	597		26	54	7%	9%		

July	20, 9pm to 11	pm Cohort		Average load reduction per AC (W)					
	+3°F		128						
	+5°F			191					
	+7°F		228						
Cohort	Total	Total ACs	Cust	omers	ACs Opted	% Customers	% ACs		
	Customers		Opte	ed Out	Out	Opted Out	Opted Out		
+3°F	505	870		83	99	16%	11%		
+5°F	570	1056	1	40	183	25%	17%		
+7°F	585	965	1	11	136	19%	14%		

July	/ 29, 7pm to 11	om Cohort		Average load reduction per AC (W)					
	+3°F		67						
	+4°F			75					
	+5°F		114						
Cohort	Total Customers	Total ACs	Cust Opte	omers ed Out	ACs Opted Out	% Customers Opted Out	% ACs Opted Out		
+3°F	714	1188	1	L42	174	20%	15%		
+4°F	570	1049	1	L37	200	24%	19%		
+5°F	515	895	1	L49	199	29%	22%		

Augu	ust 18, 7pm to :	11pm Cohort		Average load reduction per AC (W)					
	+3°F			85					
	+4°F			63					
	+5°F			93					
Cohort	Total Customers	Total ACs	Custo Opteo	mers d Out	ACs Opted Out	% Customers Opted Out	% ACs Opted Out		
+3°F	1689	2694	23	81	271	14%	10%		
+4°F	701	1198	11	.8	153	17%	13%		
+5°F	555	1056	13	8	205	25%	19%		

Results for the BYOD Program Model demand response events are below.

Demand response date	Offset	Participating customers	Participating units	Approximate reduction per AC (W)	
6/24/2015	5°F	67	87	196	
7/20/2015	5°F	156	219	199	
7/29/2015	5°F	172	232	197	
8/18/2015	5°F	181	242	196	

Table 25: BYOD Event Performance:

RSAP Program Summary

RSAP 2015 introduced a number of program improvements, including new program models and new strategies for incentive rewards and customer engagement. The goals included: (1) growing the program and interest in residential DR year over year; (2) reducing program costs; (3) diversification of the DR portfolio; and (4) increasing setup rates and DR participation. Giving customers the opportunity to "try" and get a smartAC kit for free, with an opportunity to keep the devices resulted in quality enrollments, as those customers who signed up had to provide credit card information and knew that setting up and using their devices was a key component of that transaction. The 2015 BYOD program model further explored how a customer can get connected with a self-purchased smartAC and can interact with the utility to earn rewards for DR participation. Rewarding BYOD and smartAC kit customers with points that they could cash in for online gift cards via their mobile devices helped reduce the program costs, by eliminating the need to install devices and rewarding customers in program activities, such as social sharing, referring friends, and participating in DR. Rewarding

customers more real-time for their contributions to DR resulted in high set up rates and DR participation.

12. RESIDENTIAL PROGRAM CONCLUSIONS

RSAP made improvements in 2015 by requiring a level of customer investment and engaging customers via a rewards platform. High set up rates and event participation numbers show that customers were both motivated by having something at stake – the risk of getting charged for not participating as part of the terms of the "Try It" program, as well as having something to gain – earning coolPoint rewards. Customer feedback further supports the impact of a rewards system on motivating demand response behavior.

RSAP 2015 also stands to benefit in future implementation from its 2015 awareness and education campaigns. This year, several more customers were reached via broad e-blast, mainstream media and social media campaigns. As a result, the program generated a large number of enrollments, which demonstrates general interest.

2015 engagement and education strategies can be woven into all aspects of future program design for continued expansion of DR resources and DR performance.

13. CON EDISON DEMAND RESPONSE CONCLUSIONS

The Company has long been a committed leader in regard to demand response. The Company has developed and deployed a broad range of demand response solutions and continues to successfully create opportunities for customers to better control their electricity use while providing value to the grid.

Con Edison's DR programs are constantly evolving. In 2015 the Company introduced BYOT and gamification in the RSAP program and the Three-Year Incentive structure in the Company's commercial DR programs. The Company will continue to iterate the programs going forward to incorporate learnings and new technologies, and to continue to spur program growth.

Program evolution will only gain momentum as the Reforming the Energy Vision proceeding results are implemented. The Company looks forward to leading this next phase of DR program development.



Appendix A: DLRP Event Performance Charts



DLRP Grand Central 5/11, 2015 Event Performance









DLRP Grand Central 5/12, 2015 Event Performance









DLRP Fox Hills 7/19, 2015 Event Performance







Baseline Load — Actual Load



DLRP Pennsylvania 7/20, 2015 Event Performance





Network	Tier	2015 Network Peak Demand (MW)	MW Enrolled DLRP Summer Reservation	Achieved DLRP Summer Reservation Reduction (Most recent 2015 event)	Network Impact from Achieved Reservation Participation	MW Enrolled DLRP Voluntary Reduction	Achieved DLRP Voluntary Reduction (Most recent 2015 event)	Network Impact from Achieved Voluntary Participation	Total Enrolled DLRP Summer Reservation and Voluntary	Network Impact from Enrolled DLRP Summer Reservation	Network Impact from Enrolled DLRP Voluntary	Network Impact - Total Enrolled DLRP Summer Reservation and Voluntary	Total Achieved DLRP Test
Battery Park City	Tier I	63	4.5	6.14	9.74%	0.00	0.00	0.00%	4.5	7.18%	0.00%	7.18%	9.74%
Bay Ridge	Tier I	243	2.0	0.54	0.22%	0.00	0.00	0.00%	2.0	0.84%	0.00%	0.84%	0.22%
Beekman	Tier I	128	4.3	3.77	2.95%	1.00	0.02	0.01%	5.3	3.32%	0.78%	4.11%	2.96%
Borden	Tier I	116	1.9	1.41	1.22%	0.14	0.00	0.00%	2.1	1.65%	0.12%	1.77%	1.22%
Borough Hall	Tier I	313	3.8	4.19	1.34%	0.08	0.00	0.00%	3.8	1.20%	0.02%	1.22%	1.34%
Bowling Green	Tier I	113	5.2	3.98	3.52%	0.00	0.00	0.00%	5.2	4.58%	0.00%	4.58%	3.52%
Brighton Beach	Tier I	104	0.4	0.00	0.00%	0.00	0.00	0.00%	0.4	0.43%	0.00%	0.43%	0.00%
Buchanan	Tier I	129	0.3	0.77	0.60%	0.00	0.00	0.00%	0.3	0.23%	0.00%	0.23%	0.60%
Canal	Tier I	112	15.4	2.91	2.60%	0.00	0.00	0.00%	15.4	13.75%	0.00%	13.75%	2.60%
Cedar Street	Tier I	110	0.0	0.00	0.00%	0.00	0.00	0.00%	0.0	0.00%	0.00%	0.00%	0.00%
Central Bronx	Tier II	186	3.2	3.45	1.86%	0.00	0.00	0.00%	3.2	1.73%	0.00%	1.73%	1.86%
Central Park	Tier I	228	0.9	0.68	0.30%	0.00	0.00	0.00%	0.9	0.41%	0.00%	0.41%	0.30%
Chelsea	Tier I	229	4.6	1.98	0.86%	0.00	0.00	0.00%	4.6	1.99%	0.00%	1.99%	0.86%
City Hall	Tier I	152	2.0	0.12	0.08%	0.00	0.00	0.00%	2.0	1.28%	0.00%	1.28%	0.08%
Columbus Circle	Tier I	132	3.5	2.45	1.86%	0.00	0.00	0.00%	3.5	2.66%	0.00%	2.66%	1.86%
Cooper Square	Tier I	256	2.8	2.06	0.80%	0.00	0.00	0.00%	2.8	1.11%	0.00%	1.11%	0.80%
Cortlandt	Tier I	65	1.7	0.89	1.37%	0.00	0.00	0.00%	1.7	2.60%	0.00%	2.60%	1.37%
Crown Heights	Tier II	212	0.5	0.21	0.10%	0.00	0.00	0.00%	0.5	0.25%	0.00%	0.25%	0.10%
Elmsford No.2	Tier I	187	0.2	0.23	0.12%	0.00	0.00	0.00%	0.2	0.11%	0.00%	0.11%	0.12%
Empire	Tier I	61	1.5	1.09	1.78%	0.00	0.00	0.00%	1.5	2.41%	0.00%	2.41%	1.78%
Fashion	Tier I	70	0.2	0.13	0.19%	0.00	0.00	0.00%	0.2	0.22%	0.00%	0.22%	0.19%
Flatbush	Tier II	284	1.7	0.55	0.19%	0.00	0.00	0.00%	1.7	0.60%	0.00%	0.60%	0.19%
Flushing	Tier I	395	6.7	7.99	2.02%	0.00	0.00	0.00%	6.7	1.69%	0.00%	1.69%	2.02%
Fordham	Tier I	262	2.5	2.81	1.07%	0.00	0.00	0.00%	2.5	0.95%	0.00%	0.95%	1.07%
Fox Hills	Tier I	221	0.8	0.36	0.16%	0.00	0.00	0.00%	0.8	0.36%	0.00%	0.36%	0.16%
Freedom	Tier I	21	0.0	0.00	0.00%	0.00	0.00	0.00%	0.0	0.00%	0.00%	0.00%	0.00%
Fresh Kills	Tier I	198	2.3	0.85	0.43%	0.03	0.03	0.01%	2.3	1.17%	0.01%	1.18%	0.44%
Fulton	Tier I	103	3.5	3.29	3.19%	0.00	0.00	0.00%	3.5	3.40%	0.00%	3.40%	3.19%
Grand Central	Tier I	203	6.3	4.53	2.23%	0.20	0.04	0.02%	6.5	3.08%	0.10%	3.18%	2.25%
Granite Hill	Tier I	234	1.6	0.99	0.42%	0.15	0.00	0.00%	1.8	0.68%	0.06%	0.75%	0.42%
Grasslands	Tier I	121	2.5	2.66	2.20%	0.00	0.00	0.00%	2.5	2.07%	0.00%	2.07%	2.20%
Greeley Square	Tier I	68	0.5	0.49	0.72%	0.18	0.00	0.00%	0.7	0.78%	0.26%	1.04%	0.72%
Greenwich	Tier I	74	0.3	0.21	0.28%	0.00	0.00	0.00%	0.3	0.35%	0.00%	0.35%	0.28%
Harlem	lierl	198	2.4	2.43	1.23%	0.00	0.00	0.00%	2.4	1.19%	0.00%	1.19%	1.23%
Harrison	lier l	248	2.1	1.49	0.60%	0.00	0.00	0.00%	2.1	0.84%	0.00%	0.84%	0.60%
Herald Square	Tieri	103	3.6	1.15	1.12%	0.00	0.00	0.00%	3.6	3.46%	0.00%	3.46%	1.12%
Hudson	lier l	61	3.7	0.47	0.77%	0.00	0.00	0.00%	3.7	6.04%	0.00%	6.04%	0.77%
Hunter	Tierl	/5	1.2	0./1	0.95%	0.00	0.00	0.00%	1.2	1.56%	0.00%	1.56%	0.95%
Jackson Heights	Tierl	194	2.3	2.01	1.04%	0.00	0.00	0.00%	2.3	1.20%	0.00%	1.20%	1.04%
Jamaica	Tier I	464	3.2	2.15	0.46%	0.00	0.00	0.00%	3.2	0.68%	0.00%	0.68%	0.46%

Appendix B: DLRP Reservation Payment Option and Voluntary Participation Programs - Enrolled and Achieved System Impacts

			MW	Achieved DLRP	Network	MW	Achieved DLRP	Network	Total Envalled	Network	Network	Network Impact	
		2015 Network	Enrolled	Reservation	Impact from	Enrolled	Voluntary	Impact from	Total Enrolled	Impact -	Impact -	- Total Enrolled	Total
Network	Tier	Peak Demand	DLRP	Reduction	Achieved	DLRP	Reduction	Achieved	DLRP Decomunition and	Enrolled	Enrolled	DLRP	Achieved
		(MW)	Summer	(Most recent	Reservation	Voluntary	(Most recent	Voluntary	Keservation and	DLRP	DLRP	Reservation and	DLRP Test
			Reservation	2015 event)	Participation	Reduction	2015 event)	Participation	voluntary	Reservation	Voluntary	Voluntary	
Kips Bay	Tier I	124	6.0	6.41	5.17%	0.00	0.00	0.00%	6.0	4.83%	0.00%	4.83%	5.17%
Lenox Hill	Tier I	268	4.8	5.34	1.99%	0.00	0.00	0.00%	4.8	1.77%	0.00%	1.77%	1.99%
Lincoln Square	Tier I	154	5.8	3.82	2.48%	0.00	0.00	0.00%	5.8	3.79%	0.00%	3.79%	2.48%
Long Island City	Tier I	236	5.7	1.42	0.60%	0.10	0.00	0.00%	5.8	2.43%	0.04%	2.47%	0.60%
Madison Square	Tier I	250	3.8	3.00	1.20%	0.55	0.00	0.00%	4.4	1.52%	0.22%	1.74%	1.20%
Maspeth	Tier I	262	3.6	1.62	0.62%	0.00	0.00	0.00%	3.6	1.37%	0.00%	1.37%	0.62%
Millwood West	Tier I	89	0.3	0.20	0.23%	0.00	0.00	0.00%	0.3	0.39%	0.00%	0.39%	0.23%
Mohansic	Tier I	8	0.0	0.00	0.00%	0.00	0.00	0.00%	0.0	0.00%	0.00%	0.00%	0.00%
Northeast Bronx	Tier II	117	2.6	3.09	2.64%	0.05	0.00	0.00%	2.7	2.24%	0.04%	2.28%	2.64%
Ocean Parkway	Tier I	176	1.2	1.07	0.61%	0.00	0.00	0.00%	1.2	0.70%	0.00%	0.70%	0.61%
Ossining West	Tier I	81	0.0	0.00	0.00%	0.00	0.00	0.00%	0.0	0.00%	0.00%	0.00%	0.00%
Park Place	Tier I	84	4.9	4.28	5.10%	0.00	0.00	0.00%	4.9	5.83%	0.00%	5.83%	5.10%
Park Slope	Tier II	223	0.3	0.35	0.16%	0.00	0.00	0.00%	0.3	0.12%	0.00%	0.12%	0.16%
Pennsvlvania	Tier I	253	13.9	2.10	0.83%	0.00	0.00	0.00%	13.9	5.50%	0.00%	5.50%	0.83%
Plaza	Tier I	157	3.6	2.66	1.69%	0.00	0.00	0.00%	3.6	2.31%	0.00%	2.31%	1.69%
Pleasantville	Tier I	85	0.0	0.00	0.00%	0.00	0.00	0.00%	0.0	0.00%	0.00%	0.00%	0.00%
Prospect Park	Tier I	67	0.0	0.00	0.00%	0.00	0.00	0.00%	0.0	0.00%	0.00%	0.00%	0.00%
Randall's Island	Tier I	23	0.6	0.94	4.08%	0.00	0.00	0.00%	0.6	2.78%	0.00%	2.78%	4.08%
Rego Park	Tier I	244	1.1	0.59	0.24%	0.00	0.00	0.00%	1.1	0.47%	0.00%	0.47%	0.24%
Richmond Hill	Tier II	346	3.7	1.25	0.36%	0.00	0.00	0.00%	3.7	1.07%	0.00%	1.07%	0.36%
Ridgewood	Tier II	210	0.5	0.09	0.04%	0.00	0.00	0.00%	0.5	0.24%	0.00%	0.24%	0.04%
Riverdale	Tier I	100	0.6	0.98	0.98%	0.00	0.00	0.00%	0.6	0.62%	0.00%	0.62%	0.98%
Rockefeller Center	Tier I	82	6.8	4 60	5.61%	0.00	0.00	0.00%	6.8	8 31%	0.00%	8 31%	5.61%
Rockview	Tier I	92	0.0	0.00	0.00%	0.00	0.00	0.00%	0.0	0.00%	0.00%	0.00%	0.00%
Roosevelt	Tier I	79	11	0.55	0.70%	0.00	0.00	0.00%	11	1 40%	0.00%	1 40%	0.70%
Sheepshead Bay	Tier II	175	11	0.82	0.47%	0.00	0.00	0.00%	11	0.61%	0.00%	0.61%	0.47%
Sheridan Square	Tier II	177	1.1	0.23	0.13%	0.00	0.00	0.00%	17	0.95%	0.00%	0.95%	0.13%
Southeast Bronx	Tier I	221	11.6	3 92	1 77%	0.00	0.00	0.00%	11.6	5 24%	0.00%	5 24%	1 77%
Sunnyside	Tier I	85	0.1	-0.01	-0.01%	0.00	0.00	0.00%	0.1	0.09%	0.00%	0.09%	-0.01%
Sutton	Tier I	140	6.9	5.90	4 21%	0.00	0.00	0.00%	6.9	4 93%	0.00%	4 93%	4 21%
Time Square	Tier I	157	4.2	4 55	2 90%	1 45	0.00	0.00%	5.7	2.69%	0.00%	3 61%	2 90%
Triboro	Tier I	141	11	0.89	0.63%	0.00	0.00	0.00%	11	0.78%	0.00%	0.78%	0.63%
Turtle Bay	Tier I	119	3.8	2 59	2 18%	0.00	0.00	0.00%	3.8	3 21%	0.00%	3 21%	2 18%
Wainwright	Tier I	93	0.6	0.76	0.81%	0.00	0.00	0.00%	0.6	0.64%	0.00%	0.64%	0.81%
Washington Heights	Tier I	193	3.2	3.47	1 80%	0.00	0.00	0.00%	3.2	1.67%	0.00%	1.67%	1.80%
Washington St W	Tier I	219	0.4	0.35	0.16%	0.00	0.00	0.00%	0.4	0.17%	0.00%	0.17%	0.16%
West Brony	Tier I	213	1.7	1.81	0.10%	0.00	0.00	0.00%	17	0.75%	0.00%	0.75%	0.10%
White Plains	Tior I	250	2.6	1.01	0.01%	0.00	0.00	0.00%	2.6	1.01%	0.00%	1.01%	0.01%
Williamshurg	Tior I	233	2.0	9.81	3 58%	0.00	0.00	0.00%	2.0	3.01%	0.00%	3 77%	3.58%
Willowbrook	Tior I	01	0.0	0.02	0.02%	0.00	0.00	0.00%	0.0	0.05%	0.00%	0.05%	0.03%
Woodrow	Tior I	121	0.1	0.03	0.69%	0.00	0.00	0.00%	0.1	0.03%	0.00%	0.03%	0.03%
Vorkville	Tier II	206	2.5	0.03	0.09%	0.00	0.00	0.00%	0.9	0.74%	0.00%	0.74%	0.09%
	nern	300	2.1	0.30	0.32%	0.00	0.00	0.00%	2.1	0.00%	0.00%	0.00%	0.32%
Tier I		11,303	210.4	144	1.2/%	4	0.09	0.00%	214	1.86%	0.03%	1.90%	1.2/%
iier ii		2,236	17.3	11	0.49%	0	0.00	0.00%	1/	0.77%	0.00%	0.78%	0.49%
Iotal	1	13,539	227.7	155	1.14%	4	0.09	0.00%	232	1.68%	0.03%	1./1%	1.14%





Appendix C: CSRP Test Event Performance Charts





CSRP 4PM - 8PM Call Window 7/21, 2015 Test Event Performance





Call Window	Network	2014 Network Peak Demand (MW)	Enrolled CSRP Summer Reservation	Achieved CSRP Summer Reservation Reduction	Enrolled CSRP Voluntary	Achieved CSRP Voluntary	Total Enrolled CSRP Summer Reservation and Voluntary	Enrolled CSRP Summer Reservation	Enrolled CSRP Voluntary	Total Enrolled CSRP Summer Reservation and Voluntary	Total Achieved CSRP Summer Reservation
11 AM - 3 PM	Battery Park City	63	3.29	5.42	0.00	0.00	3.29	5.22%	0.00%	5.22%	8.60%
11 AM - 3 PM	Beekman	128	3.58	5.38	1.00	0.00	4.58	2.79%	0.78%	3.57%	4.20%
11 AM - 3 PM	Borden	116	0.00	0.00	0.14	0.00	0.14	0.00%	0.12%	0.12%	0.00%
11 AM - 3 PM	Borough Hall	313	1.10	1.70	0.08	0.00	1.17	0.35%	0.02%	0.37%	0.54%
11 AM - 3 PM	Bowling Green	113	6.87	6.51	0.00	0.00	6.87	6.08%	0.00%	6.08%	5.76%
11 AM - 3 PM	City Hall	152	1.22	1.79	0.00	0.00	1.22	0.80%	0.00%	0.80%	1.18%
11 AM - 3 PM	Columbus Circle	132	1.77	1.99	0.00	0.00	1.77	1.34%	0.00%	1.34%	1.50%
11 AM - 3 PM	Cortlandt	65	1.46	0.86	0.00	0.00	1.46	2.24%	0.00%	2.24%	1.32%
11 AM - 3 PM	Freedom	21	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
11 AM - 3 PM	Fulton	103	3.11	2.93	0.00	0.00	3.11	3.02%	0.00%	3.02%	2.84%
11 AM - 3 PM	Grand Central	203	5.80	7.66	0.20	0.00	6.00	2.86%	0.10%	2.96%	3.77%
11 AM - 3 PM	Greeley Square	68	0.13	0.16	0.18	0.00	0.31	0.19%	0.26%	0.45%	0.24%
11 AM - 3 PM	Greenwich	74	0.23	0.45	0.00	0.00	0.23	0.31%	0.00%	0.31%	0.61%
11 AM - 3 PM	Hunter	75	0.85	0.94	0.00	0.00	0.85	1.13%	0.00%	1.13%	1.26%
11 AM - 3 PM	Kips Bay	124	3.84	5.90	0.00	0.00	3.84	3.10%	0.00%	3.10%	4.76%
11 AM - 3 PM	Lenox Hill	268	4.70	5.21	0.00	0.00	4.70	1.75%	0.00%	1.75%	1.94%
11 AM - 3 PM	Lincoln Square	154	4.75	4.61	0.00	0.00	4.75	3.09%	0.00%	3.09%	3.00%
11 AM - 3 PM	Madison Square	250	2.15	3.06	0.55	0.00	2.70	0.86%	0.22%	1.08%	1.23%
11 AM - 3 PM	Park Place	84	1.23	0.50	0.00	0.00	1.23	1.46%	0.00%	1.46%	0.60%
11 AM - 3 PM	Pennsylvania	253	5.09	3.63	0.00	0.00	5.09	2.01%	0.00%	2.01%	1.43%
11 AM - 3 PM	Plaza	157	3.57	3.38	0.00	0.00	3.57	2.27%	0.00%	2.27%	2.15%
11 AM - 3 PM	Sheridan Square	177	0.50	1.03	0.00	0.00	0.50	0.28%	0.00%	0.28%	0.58%
11 AM - 3 PM	Sutton	140	4.98	5.83	0.00	0.00	4.98	3.55%	0.00%	3.55%	4.16%
11 AM - 3 PM	Time Square	157	3.61	4.65	1.45	0.00	5.06	2.30%	0.92%	3.22%	2.96%
11 AM - 3 PM	Turtle Bay	119	5.56	5.54	0.00	0.00	5.56	4.67%	0.00%	4.67%	4.65%
2 PM - 6 PM	Bay Ridge	243	2.33	3.33	0.00	0.00	2.33	0.96%	0.00%	0.96%	1.37%
2 PM - 6 PM	Canal	112	0.39	0.65	0.00	0.00	0.39	0.35%	0.00%	0.35%	0.58%
2 PM - 6 PM	Chelsea	229	0.33	0.53	0.00	0.00	0.33	0.14%	0.00%	0.14%	0.23%
2 PM - 6 PM	Empire	61	1.48	1.61	0.00	0.00	1.48	2.42%	0.00%	2.42%	2.64%
2 PM - 6 PM	Fashion	70	0.50	0.59	0.00	0.00	0.50	0.71%	0.00%	0.71%	0.84%
2 PM - 6 PM	Herald Square	103	1.66	1.56	0.00	0.00	1.66	1.61%	0.00%	1.61%	1.51%
2 PM - 6 PM	Hudson	61	0.43	0.18	0.00	0.00	0.43	0.71%	0.00%	0.71%	0.29%
2 PM - 6 PM	Long Island City	236	3.88	5.24	0.10	0.00	3.98	1.64%	0.04%	1.69%	2.22%
2 PM - 6 PM	Park Slope	223	0.13	0.21	0.00	0.00	0.13	0.06%	0.00%	0.06%	0.10%
2 PM - 6 PM	Rockefeller Center	82	4.74	5.59	0.00	0.00	4.74	5.78%	0.00%	5.78%	6.82%
2 PM - 6 PM	Roosevelt	79	0.15	0.17	0.00	0.00	0.15	0.19%	0.00%	0.19%	0.22%

Appendix D: CSRP Reservation Payment Option and Voluntary Participation Programs - Enrolled and Achieved System Impacts
Call Window	Network	2014 Network Peak Demand (MW)	Enrolled CSRP Summer Reservation	Achieved CSRP Summer Reservation Reduction	Enrolled CSRP Voluntary	Achieved CSRP Voluntary	Total Enrolled CSRP Summer Reservation and Voluntary	Enrolled CSRP Summer Reservation	Enrolled CSRP Voluntary	Total Enrolled CSRP Summer Reservation and Voluntary	Total Achieved CSRP Summer Reservation
4 PM - 8 PM	Cooper Square	256	1.77	1.45	0.00	0.00	1.77	0.69%	0.00%	0.69%	0.57%
4 PM - 8 PM	Fox Hills	221	0.25	0.37	0.00	0.00	0.25	0.11%	0.00%	0.11%	0.17%
4 PM - 8 PM	Fresh Kills	198	1.61	1.94	0.03	0.00	1.64	0.81%	0.01%	0.83%	0.98%
4 PM - 8 PM	Ocean Parkway	176	0.05	0.11	0.00	0.00	0.05	0.03%	0.00%	0.03%	0.07%
4 PM - 8 PM	Richmond Hill	346	1.20	1.75	0.00	0.00	1.20	0.35%	0.00%	0.35%	0.51%
4 PM - 8 PM	Sunnyside	85	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
4 PM - 8 PM	Triboro	141	0.35	0.39	0.00	0.00	0.35	0.25%	0.00%	0.25%	0.28%
4 PM - 8 PM	Wainwright	93	0.53	0.95	0.00	0.00	0.53	0.56%	0.00%	0.56%	1.02%
4 PM - 8 PM	West Bronx	222	0.17	0.19	0.00	0.00	0.17	0.07%	0.00%	0.07%	0.09%
4 PM - 8 PM	Williamsburg	274	11.60	11.50	0.00	0.00	11.60	4.23%	0.00%	4.23%	4.20%
4 PM - 8 PM	Willowbrook	91	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
4 PM - 8 PM	Woodrow	121	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
7 PM - 11 PM	Brighton Beach	104	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
7 PM - 11 PM	Central Bronx	186	1.48	2.25	0.00	0.00	1.48	0.80%	0.00%	0.80%	1.21%
7 PM - 11 PM	Central Park	228	0.07	0.01	0.00	0.00	0.07	0.03%	0.00%	0.03%	0.00%
7 PM - 11 PM	Crown Heights	212	0.10	0.15	0.00	0.00	0.10	0.05%	0.00%	0.05%	0.07%
7 PM - 11 PM	Flatbush	284	0.08	0.07	0.00	0.00	0.08	0.03%	0.00%	0.03%	0.03%
7 PM - 11 PM	Flushing	395	4.90	6.67	0.00	0.00	4.90	1.24%	0.00%	1.24%	1.69%
7 PM - 11 PM	Fordham	262	2.90	0.92	0.00	0.00	2.90	1.11%	0.00%	1.11%	0.35%
7 PM - 11 PM	Harlem	198	1.58	1.63	0.00	0.00	1.58	0.80%	0.00%	0.80%	0.82%
7 PM - 11 PM	Jackson Heights	194	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
7 PM - 11 PM	Jamaica	464	1.20	0.27	0.00	0.00	1.20	0.26%	0.00%	0.26%	0.06%
7 PM - 11 PM	Maspeth	262	0.98	0.33	0.00	0.00	0.98	0.37%	0.00%	0.37%	0.13%
7 PM - 11 PM	Northeast Bronx	117	2.04	2.07	0.05	0.00	2.09	1.74%	0.04%	1.79%	1.77%
7 PM - 11 PM	Prospect Park	67	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
7 PM - 11 PM	Randall's Island	23	0.64	0.83	0.00	0.00	0.64	2.78%	0.00%	2.78%	3.60%
7 PM - 11 PM	Rego Park	244	0.18	0.23	0.00	0.00	0.18	0.07%	0.00%	0.07%	0.10%
7 PM - 11 PM	Ridgewood	210	0.30	-0.01	0.00	0.00	0.30	0.14%	0.00%	0.14%	0.00%
7 PM - 11 PM	Riverdale	100	0.11	0.16	0.00	0.00	0.11	0.11%	0.00%	0.11%	0.16%
7 PM - 11 PM	Sheepshead Bay	175	1.01	1.28	0.00	0.00	1.01	0.58%	0.00%	0.58%	0.73%
7 PM - 11 PM	Southeast Bronx	221	12.50	9.12	0.00	0.00	12.50	5.66%	0.00%	5.66%	4.13%
7 PM - 11 PM	Washington Heights	193	2.90	2.34	0.00	0.00	2.90	1.50%	0.00%	1.50%	1.21%
7 PM - 11 PM	Yorkville	306	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%
Total	<u> </u>	11677	135.81	146.57	3.77	0.00	139.57	1.16%	0.03%	1.20%	1.26%
11 AM - 3 PM		3509	69.34	79.12	3.59	0.00	72.93	1.98%	0.10%	2.08%	2.25%
2 PM - 6 PM		1499	28.51	28.78	0.10	0.00	28.61	1.90%	0.01%	1.91%	1.92%
4 PM - 8 PM		2224	17.50	18.66	0.03	0.00	17.53	0.79%	0.00%	0.79%	0.84%
7 PM - 11 PM		4445	20.46	19.20	0.05	0.00	20.51	0.46%	0.00%	0.46%	0.43%



Appendix E: DLC Test & Event Performance

Event Summary

Event Information

Utility	ConEdison
Event date	May 12, 2015
Preconditioning start time	12:00 p.m.
Event start time	1:00 p.m.
Event end time	5:00 p.m.
Number of devices	1462
Number of households	889

Participation Summary

	Device Count	Percentage
Sent	1462	100%
Received	1427	98%
Started	935	64%*

	Device Count	Percentage
Started	935	100%
Completed	757	81%

Calculated Load Shift Summary

Nest calculates load shift by comparing actual runtime as recorded by the thermostat to baseline runtime. Energy calculations are estimated using average capacity for the utility service territory: [AC Capacity: kW] x [AC Runtime: hrs] = [Energy: kWh]

Average AC capacity for the utility service territory: 3.9 kW	Aggregate
Baseline HVAC Runtime	1076.26 hours
Actual HVAC Runtime	528.96 hours
Duty Cycle Load Shift	50.85%
Energy Load Shift	2134.47 kWh
Time-Averaged Power Load Shift	533.62 kW

*This particular event had an unusually high dropoff from received to started, probably due to the event timing. A large majority of the devices that received the event but did not start it were unable to start the event because they were in heating mode or off when they received the event.

Residential DLC Network Event - 23 Jun 2015

BYOT

Resource: All Zones Duty Cycle - ALL Grout Cycling Strategy: 50% Cycling								
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats		
Residential	June 23, 2015	June 11, 2015	12:00 PM	4:00 PM	No Refresh	296		

Demand (kW)	Hour ending 1:00 PM	Hour ending 2:00 PM	Hour ending 3:00 PM	Hour ending 4:00 PM	Hour ending	Average
Per unit kW - Baseline	0.37	0.40	0.44	0.47		0.42
Per unit kW - Event	0.22	0.25	0.29	0.33		0.27
Cumulative Overrides	1.43%	2.33%	3.58%	5.20%		3.14%
Per unit kW reduction	0.16	0.15	0.15	0.14		0.15
Per unit kW reduction without overrides	0.16	0.15	0.15	0.15		0.15
Total kW without curtailment	111	118	130	138		124
Total kW with curtailment	64	74	87	96		80
Total kW load reduction	47	44	43	41		44



|--|

BYOT								
note: insufficient sites for separate zonal analysis								
Resource: Zone H Duty Cycle - ALL Groups Cycling Strategy: 50% Cycling								
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats		
Residential	June 23, 2015	June 11, 2015	12:00 PM	4:00 PM	No Refresh	20		

Demand (kW)	Hour ending 1:00 PM	Hour ending 2:00 PM	Hour ending 3:00 PM	Hour ending 4:00 PM	Hour ending	Average
Per unit kW - Baseline	0.14	0.16	0.19	0.18		0.17
Per unit kW - Event	0.12	0.16	0.31	0.36		0.24
Cumulative Overrides	1.43%	2.33%	3.58%	5.20%		3.14%
Per unit kW reduction	0.02	0.00	-0.12	-0.18		-0.07
Per unit kW reduction without overrides	0.02	0.00	-0.12	-0.19		-0.07
Total kW without curtailment	3	3	4	4		3
Total kW with curtailment	2	3	6	7		5
Total kW load reduction	0	0	-2	-4		-1



Residential DLC Network Event - 23 Jun 2015

BYOT

Resource: Zone I Duty Cycle - ALL Groups Cycling Strategy: 50% Cycling							
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats	
Residential	June 23, 2015	June 11, 2015	12:00 PM	4:00 PM	No Refresh	118	

Demand (kW)	Hour ending 1:00 PM	Hour ending 2:00 PM	Hour ending 3:00 PM	Hour ending 4:00 PM	Hour ending	Average
Per unit kW - Baseline	0.40	0.42	0.47	0.50		0.45
Per unit kW - Event	0.25	0.26	0.33	0.34		0.29
Cumulative Overrides	1.43%	2.33%	3.58%	5.20%		3.14%
Per unit kW reduction	0.15	0.15	0.14	0.16		0.15
Per unit kW reduction without overrides	0.16	0.16	0.15	0.17		0.16
Total kW without curtailment	47	49	55	59		53
Total kW with curtailment	29	31	39	40		35
Total kW load reduction	18	18	17	19		18



Residential DLC Network Event - 23 Jun 2015

Residential DLC Network Event - 23 Jun 2015

BYOT

Resource: Zone J Duty Cycle - ALL Groups Cycling Strategy: 50% Cycling						
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	June 23, 2015	June 11, 2015	12:00 PM	4:00 PM	No Refresh	158

Demand (kW)	Hour ending 1:00 PM	Hour ending 2:00 PM	Hour ending 3:00 PM	Hour ending 4:00 PM	Hour ending	Average
Per unit kW - Baseline	0.39	0.41	0.45	0.48		0.43
Per unit kW - Event	0.21	0.25	0.27	0.31		0.26
Cumulative Overrides	1.43%	2.33%	3.58%	5.20%		3.14%
Per unit kW reduction	0.18	0.16	0.18	0.16		0.17
Per unit kW reduction without overrides	0.18	0.17	0.19	0.17		0.18
Total kW without curtailment	61	65	71	75		68
Total kW with curtailment	33	40	42	49		41
Total kW load reduction	28	26	29	26		27



Rush Hour Report Event Summary

Event Information

Utility	Con Edison
Event date	Jun 23, 2015
Preconditioning start time	11:00 AM
Event start time	12:00 PM
Event end time	4:00 PM
Number of devices	1,677
Number of households	993

Participation Summary

	Device Count	Percentage
Sent	1,677	100.00%
Received	1,638	97.67%
Started	1,399	83.42%

	Device Count	Percentage
Started	1,399	100.00%
Completed	1,113	79.56%

Calculated Load Shift Summary

	Avg. Per Device	Avg. Per Household	Aggregate
Baseline HVAC Runtime	110.35 mins	168.64 mins	1840.98 hours
Actual HVAC Runtime	56.09 mins	85.72 mins	935.82 hours
Duty Cycle Load Shift	49.59%	48.41%	49.17%
Energy Load Shift	3.53 kWh	5.39 kWh	3.53 MWh
Time-Average Power Load Shift	0.88 kW	1.35 kW	882.54 kW

Resource: Zone H Duty Cycle - ALL Groups Cycling Strategy: 50% Cycling							
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats	
Residential	June 24, 2015	June 11, 2015	4:00 PM	5:00 PM	No Refresh	1,755	

Demand (kW)	Hour ending 5:00 PM	Hour ending	Hour ending	Hour ending	Hour ending	Average
Per unit kW - Baseline	1.42					1.42
Per unit kW - Event	0.92					0.92
Cumulative Overrides	1.7%					1.7%
Per unit kW reduction	0.50					0.50
Per unit kW reduction without overrides	0.51					0.51
Total kW without curtailment	2,493					2493
Total kW with curtailment	1,609					1609
Total kW load reduction	884					884



Resource: Zone I Duty Cycl	e - ALL Groups	Cycling Strateg	y: 50% Cycling			
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	June 24, 2015	June 11, 2015	4:00 PM	5:00 PM	No Refresh	5,102

Demand (kW)	Hour ending	Average				
	5:00 PM					
Per unit kW - Baseline	1.75					1.75
Per unit kW - Event	1.12					1.12
Cumulative Overrides	1.7%					1.7%
Per unit kW reduction	0.62					0.62
Per unit kW reduction without overrides	0.63					0.63
Total kW without curtailment	8,907					8907
Total kW with curtailment	5,732					5732
Total kW load reduction	3,175					3175



Resource: Zone J Duty Cycle - ALL Groups Cycling Strategy: 50% Cycling						
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	June 24, 2015	June 11, 2015	4:00 PM	5:00 PM	No Refresh	10,901

Demand (kW)	Hour ending 5:00 PM	Hour ending	Hour ending	Hour ending	Hour ending	Average
Per unit kW - Baseline	1.54					1.54
Per unit kW - Event	1.08					1.08
Cumulative Overrides	1.8%					1.8%
Per unit kW reduction	0.46					0.46
Per unit kW reduction without overrides	0.46					0.46
Total kW without curtailment	16,754					16754
Total kW with curtailment	11,781					11781
Total kW load reduction	4,973					4973



Resource: Zone H Duty Cycle - ALL Groups Cycling Strategy: 50% Cycling									
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats			
Small Business	June 24, 2015	June 11, 2015	4:00 PM	5:00 PM	No Refresh	129			

Demand (kW)	Hour ending 5:00 PM	Hour ending	Hour ending	Hour ending	Hour ending	Average
Per unit kW - Baseline	2.06					2.06
Per unit kW - Event	1.26					1.26
Cumulative Overrides	5.4%					5.4%
Per unit kW reduction	0.79					0.79
Per unit kW reduction without overrides	0.84					0.84
Total kW without curtailment	265					265
Total kW with curtailment	163					163
Total kW load reduction	102					102



Resource: Zone I Duty Cycl	e - ALL Groups	Cycling Strateg	y: 50% Cycling			
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Small Business	June 24, 2015	June 11, 2015	4:00 PM	5:00 PM	No Refresh	603

Demand (kW)	Hour ending	Average				
	5:00 PIVI					
Per unit kW - Baseline	3.07					3.07
Per unit kW - Event	1.99					1.99
Cumulative Overrides	4.9%					4.9%
Per unit kW reduction	1.07					1.07
Per unit kW reduction without overrides	1.13					1.13
Total kW without curtailment	1,849					1849
Total kW with curtailment	1,203					1203
Total kW load reduction	646					646



Resource: Zone J Duty Cyc	e - ALL Groups	Cycling Strateg	y: 50% Cycling			
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Small Business	June 24, 2015	June 11, 2015	4:00 PM	5:00 PM	No Refresh	3,645

Demand (kW)	Hour ending 5:00 PM	Hour ending	Hour ending	Hour ending	Hour ending	Average
Per unit kW - Baseline	2.67					2.67
Per unit kW - Event	1.87					1.87
Cumulative Overrides	7.4%					7.4%
Per unit kW reduction	0.79					0.79
Per unit kW reduction without overrides	0.86					0.86
Total kW without curtailment	9,725					9725
Total kW with curtailment	6,831					6831
Total kW load reduction	2,893					2893



Resource: Zone J - Group 82: Fox Hills		Cycling Strategy	r: 50% Cycling			
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	July 19, 2015	August 16, 2015	6:30 PM	12:00 midnight	9:24 PM	1,369

Demand (kW)	1/2 Hour end 7:00 PM	Hour ending 8:00 PM	Hour ending 9:00 PM	Hour ending 10:00 PM	Hour ending 11:00 PM	Hour ending 12:00 AM	Average
Per unit kW - Baseline	2.35	2.17	2.06	2.01	1.79	1.59	1.99
Per unit kW - Event	1.98	1.66	1.72	1.70	1.59	1.62	1.71
Cumulative Overrides	2.9%	5.6%	10.8%	8.5%	6.8%	11.7%	7.7%
Per unit kW reduction	0.37	0.52	0.34	0.30	0.20	-0.04	0.28
Per unit kW reduction without overrides	0.38	0.55	0.38	0.33	0.22	-0.04	0.30
Total kW without curtailment	3,220	2,978	2,817	2,748	2,451	2,172	2731
Total kW with curtailment	2,712	2,269	2,358	2,331	2,174	2,221	2344
Total kW load reduction	508	709	459	417	277	-48	387



Resource: Zone J - Group 82	Cycling Strategy	/: 50% Cycling				
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Small Business	July 19, 2015	August 16, 2015	6:30 PM	12:00 midnight	9:24 PM	104

Demond (1940)	1/2 Hour end	Hour ending					
Demand (KW)	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	Average
Per unit kW - Baseline	1.83	1.74	1.59	1.42	1.28	1.11	1.49
Per unit kW - Event	1.47	1.23	1.22	1.04	0.81	0.76	1.09
Cumulative Overrides	0.9%	2.4%	3.8%	1.9%	0.5%	0.9%	1.7%
Per unit kW reduction	0.36	0.51	0.37	0.38	0.47	0.35	0.41
Per unit kW reduction without overrides	0.36	0.52	0.38	0.39	0.47	0.35	0.41
Total kW without curtailment	190	181	165	148	134	115	155
Total kW with curtailment	153	127	127	108	84	79	113
Total kW load reduction	37	53	38	40	49	36	42



CPTWiFi

Resource: Zone J - Group 82: Fox Hills		Cycling Strategy	/: 50% Cycling			
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	July 19, 2015	August 16, 2015	6:30 PM	12:00 midnight	9:24 PM	444

Domand (IAAA)	Hour ending	Average					
Demana (KW)	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	Average
Per unit kW - Baseline	1.94	1.90	1.90	1.78	1.70	1.52	1.79
Per unit kW - Event	1.06	1.01	1.31	1.36	1.27	1.22	1.21
Cumulative Overrides	2.7%	8.7%	15.2%	10.6%	5.9%	9.0%	8.7%
Per unit kW reduction	0.87	0.89	0.59	0.42	0.43	0.30	0.58
Per unit kW reduction without overrides	0.90	0.98	0.70	0.47	0.46	0.33	0.64
Total kW without curtailment	861	844	845	791	755	673	795
Total kW with curtailment	472	447	583	605	565	540	535
Total kW load reduction	388	397	262	186	191	133	260



<u>Monday, July 20, 2015</u>

Residential DLC Network Event

Resource: Zone J - Group 82: Fox Hills Cycling Strategy: 50% Cycling							
Category	Event Day	Baseline Day	Start Time	End Time		Event Refresh	# of Thermostats
Residential	July 20, 2015	August 17, 2015	2:00 PM	8:00 PM		@ 5 pm, 6 pm	1,372

Demand (kW)	Hour ending 3:00 PM	Hour ending 4:00 PM	Hour ending 5:00 PM	Hour ending 6:00 PM	Hour ending 7:00 PM	Hour ending 8:00 PM	Average
Per unit kW - Baseline	2.19	2.26	2.39	2.31	2.24	2.28	2.28
Per unit kW - Event	1.17	1.33	1.55	1.62	1.72	1.92	1.55
Cumulative Overrides	1.5%	4.5%	7.6%	7.5%	6.4%	9.1%	6.1%
Per unit kW reduction	1.02	0.93	0.84	0.69	0.53	0.36	0.73
Per unit kW reduction without overrides	1.03	0.97	0.91	0.75	0.56	0.40	0.77
Total kW without curtailment	3,000	3,104	3,279	3,176	3,079	3,130	3128
Total kW with curtailment	1,607	1,831	2,129	2,225	2,354	2,633	2130
Total kW load reduction	1,394	1,273	1,149	952	725	497	998
	1,372	1,372	1,372	1,372	1,372	1,372	



Monday, July 20, 2015

Small Business DLC Network Event

LEGACY

Resource: Zone J - Group 82	esource: Zone J - Group 82: Fox Hills Cycling Strategy: 50% Cycling						
Category	Event Day	Baseline Day	Start Time	End Time		Event Refresh	# of Thermostats
Small Business	July 20, 2015	August 17, 2015	2:00 PM	8:00 PM		@ 5 pm, 6 pm	105

Domand (kW)	Hour ending	Average					
Demand (RVV)	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	Average
Per unit kW - Baseline	3.24	3.26	3.24	2.74	2.58	2.27	2.89
Per unit kW - Event	1.53	1.70	1.81	1.69	1.72	1.69	1.69
Cumulative Overrides	3.8%	8.5%	10.8%	6.6%	1.9%	2.8%	5.7%
Per unit kW reduction	1.71	1.56	1.43	1.05	0.85	0.58	1.20
Per unit kW reduction without overrides	1.77	1.70	1.61	1.12	0.87	0.60	1.28
Total kW without curtailment	340	342	340	288	270	239	303
Total kW with curtailment	161	179	190	178	181	178	178
Total kW load reduction	179	163	151	110	90	61	126
	105	105	105	105	105	105	

Small Business DLC Network Event



Monday, July 20, 2015

Residential DLC Network Event

WIFI CPT

tesource: Zone J - Group 82: Fox Hills Cycling Strategy: 50% Cycling							
Category	Event Day	Baseline Day	Start Time	End Time		Event Refresh	# of Thermostats
Residential	July 20, 2015	August 17, 2015	2:00 PM	8:00 PM		@ 5 pm, 6 pm	294

Domand (kW)	Hour ending	Average					
Demana (KW)	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	Average
Per unit kW - Baseline	1.37	1.47	1.55	1.61	1.62	1.58	1.53
Per unit kW - Event	1.06	1.19	1.35	1.32	1.47	1.63	1.33
Cumulative Overrides	1.1%	4.3%	8.6%	9.5%	8.6%	12.0%	7.4%
Per unit kW reduction	0.31	0.28	0.21	0.29	0.15	-0.05	0.20
Per unit kW reduction without overrides	0.31	0.29	0.22	0.32	0.16	-0.06	0.21
Total kW without curtailment	403	431	456	473	475	465	451
Total kW with curtailment	312	349	396	387	431	479	392
Total kW load reduction	92	82	60	86	44	-14	58
	294	294	294	294	294	294	



Resource: Zone J - Group 83: Fresh Kills Cycling Strategy: 50% Cycling							
Category	Event Day	Baseline Day	Start Time	End Time		Event Refresh	# of Thermostats
Small Business	July 20, 2015	August 17, 2015	2:30 PM	9:00 PM	@ 5	:35 pm, 6:19 pm	110

Domand (kM)	1/2 Hour end	Hour ending	Average					
Demand (RW)	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	Average
Per unit kW - Baseline	3.34	3.48	3.29	3.11	2.91	2.49	2.02	2.95
Per unit kW - Event	2.73	2.23	2.51	2.26	2.00	1.97	1.89	2.23
Cumulative Overrides	4.5%	8.5%	17.0%	13.4%	4.9%	5.4%	8.0%	8.8%
Per unit kW reduction	0.61	1.26	0.79	0.86	0.91	0.52	0.13	0.72
Per unit kW reduction without overrides	0.64	1.37	0.95	0.99	0.96	0.55	0.14	0.80
Total kW without curtailment	368	383	362	343	320	274	222	324
Total kW with curtailment	300	245	276	248	220	217	208	245
Total kW load reduction	67	138	87	94	100	57	14	80



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Resource: Zone J - Group 83: Fresh Kills Cycling Strategy: 50% Cycling								
Category	Event Day	Baseline Day	Start Time	End Time			Event Refresh	# of Thermostats
Residential	July 20, 2015	August 17, 2015	2:30 PM	9:00 PM		@ 5	:35 pm, 6:19 pm	418

Demand (kW)	1/2 Hour end 3:00 PM	Hour ending	Hour ending 5:00 PM	Hour ending 6:00 PM	Hour ending 7:00 PM	Hour ending 8:00 PM	Hour ending 9:00 PM	Average
Per unit kW - Baseline	1.85	1.96	2.08	2.15	2.15	2.14	2.06	2,06
Per unit kW - Event	1.51	1.20	1.41	1.55	1.59	1.57	1.71	1.51
Cumulative Overrides	1.3%	2.6%	6.1%	6.5%	4.7%	8.6%	16.5%	6.6%
Per unit kW reduction	0.35	0.76	0.67	0.60	0.56	0.57	0.35	0.55
Per unit kW reduction without overrides	0.35	0.78	0.71	0.64	0.59	0.62	0.41	0.59
Total kW without curtailment	775	821	870	897	898	894	860	859
Total kW with curtailment	630	502	591	646	664	657	716	630
Total kW load reduction	145	319	279	250	234	237	145	230



WIFI CPT

Resource: Zone I - Group 92: Harrison Cycling Strategy: 50% Cycling							
Category	Event Day	Baseline Day	Start Time	End Time		Event Refresh	# of Thermostats
Residential	July 20, 2015	August 17, 2015	4:50 PM	11:00 PM		7:45 PM	271

Domand (I/M)	1/6 Hour end	Hour ending	Average					
Demand (RW)	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Average
Per unit kW - Baseline	2.03	2.02	2.03	2.03	1.87	1.67	1.45	1.87
Per unit kW - Event	1.51	1.22	1.39	1.61	1.58	1.51	1.43	1.46
Cumulative Overrides	3.0%	5.0%	11.3%	8.0%	10.5%	21.8%	24.7%	12.0%
Per unit kW reduction	0.53	0.81	0.64	0.42	0.29	0.16	0.02	0.41
Per unit kW reduction without	0.54	0.95	0.72	0.46	0.22	0.20	0.02	0.45
overrides	0.54	0.85	0.72	0.40	0.52	0.20	0.02	0.45
Total kW without curtailment	551	549	551	550	506	453	392	507
Total kW with curtailment	408	329	378	436	429	410	387	397
Total kW load reduction	143	219	173	114	77	43	5	111



Resource: Zone J - Group 75: Richmond Hill Cycling Strategy: 50% Cycling										
Category	Event Day	Baseline Day	Start Time	End Time		Refresh	# of Thermostats			
Residential	July 20, 2015	August 17, 2015	6:30 AM	12:00 PM		9:10 AM	181			

Demand (kW)	1/2 Hour end 7:00 AM	Hour ending	Average				
Per unit kW - Baseline	0.78	0.98	1.24	1.68	1.89	2.21	1.46
Per unit kW - Event	0.69	0.90	1.05	1.18	1.41	1.63	1.14
Cumulative Overrides	1.6%	3.4%	5.5%	4.7%	5.5%	8.3%	4.8%
Per unit kW reduction	0.10	0.08	0.19	0.50	0.49	0.58	0.32
Per unit kW reduction without overrides	0.10	0.08	0.20	0.53	0.51	0.63	0.34
Total kW without curtailment	142	177	224	304	343	401	265
Total kW with curtailment	124	163	189	214	255	296	207
Total kW load reduction	17	14	34	91	88	105	58



Resource: Zone J - Group 75: Richmond Hill Cycling Strategy: 50% Cycling									
Category	Event Day	Baseline Day	Start Time	End Time		Refresh	# of Thermostats		
Small Business	July 20, 2015	August 17, 2015	6:30 AM	12:00 PM		9:10 AM	141		

5 1 (110)	1/2 Hour end	Hour ending	_				
Demand (kW)	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	Average
Per unit kW - Baseline	0.92	1.06	1.52	2.46	3.34	3.63	2.15
Per unit kW - Event	0.65	0.87	1.18	1.83	2.35	2.71	1.60
Cumulative Overrides	0.6%	1.4%	7.5%	12.1%	15.9%	22.8%	10.1%
Per unit kW reduction	0.26	0.19	0.34	0.62	1.00	0.92	0.55
Per unit kW reduction without overrides	0.26	0.19	0.37	0.71	1.18	1.19	0.65
Total kW without curtailment	129	149	214	346	471	511	304
Total kW with curtailment	92	122	166	259	331	382	225
Total kW load reduction	37	27	48	88	140	129	78



WIFI CPT

Resource: Zone J - Group 75: Richmond Hill Cycling Strategy: 50% Cycling										
Category	Event Day	Baseline Day	Start Time	End Time		Refresh	# of Thermostats			
Residential	July 20, 2015	August 17, 2015	6:30 AM	12:00 PM		9:10 AM	42			

Domand (kM)	1/2 Hour end	Hour ending	Average				
Demand (KW)	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	Average
Per unit kW - Baseline	0.68	0.79	0.96	1.45	1.64	1.89	1.23
Per unit kW - Event	0.37	0.45	0.87	1.13	1.25	1.19	0.88
Cumulative Overrides	2.0%	2.9%	6.9%	6.9%	4.9%	7.8%	5.2%
Per unit kW reduction	0.31	0.34	0.09	0.32	0.39	0.70	0.36
Per unit kW reduction without overrides	0.32	0.35	0.10	0.34	0.41	0.76	0.38
Total kW without curtailment	28	33	40	61	69	79	52
Total kW with curtailment	15	19	36	48	53	50	37
Total kW load reduction	13	14	4	13	16	29	15



Resource: Zone J - Group 82: Fox Hills Cycling Strategy: 50% Cycling						
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	July 21, 2015	June 11, 2015	2:00 PM	8:00 PM	4:52 PM	1,389

Demand (kW)	Hour ending 3:00 PM	Hour ending 4:00 PM	Hour ending 5:00 PM	Hour ending 6:00 PM	Hour ending 7:00 PM	Hour ending 8:00 PM	Average
Per unit kW - Baseline	1.40	1.57	1.76	1.78	1.83	1.89	1.71
Per unit kW - Event	0.93	1.19	1.34	1.28	1.45	1.58	1.29
Cumulative Overrides	1.1%	3.7%	2.9%	3.2%	7.7%	11.7%	5.1%
Per unit kW reduction	0.47	0.38	0.42	0.50	0.39	0.31	0.41
Per unit kW reduction without overrides	0.48	0.39	0.44	0.52	0.42	0.35	0.43
Total kW without curtailment	1,950	2,174	2,448	2,478	2,546	2,620	2369
Total kW with curtailment	1,297	1,648	1,859	1,781	2,010	2,190	1797
Total kW load reduction	654	526	589	697	536	430	572



Resource: Zone J - Group 82: Fox Hills Cycling Strategy: 50% Cycling						
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Small Business	July 21, 2015	June 11, 2015	2:00 PM	8:00 PM	4:52 PM	111

	Hour ending						
Demand (kW)	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	Average
Per unit kW - Baseline	2.78	2.96	3.03	2.87	2.71	2.21	2.76
Per unit kW - Event	1.96	2.38	2.12	1.72	1.47	1.35	1.83
Cumulative Overrides	3.3%	8.0%	5.7%	2.8%	3.8%	4.7%	4.7%
Per unit kW reduction	0.82	0.59	0.91	1.15	1.24	0.86	0.93
Per unit kW reduction without overrides	0.85	0.64	0.96	1.19	1.29	0.90	0.97
Total kW without curtailment	309	329	336	318	301	245	306
Total kW with curtailment	218	264	235	190	163	150	203
Total kW load reduction	91	65	101	128	138	95	103



WIFI CPT

Resource: Zone J - Group 82: Fox Hills Cycling Strategy: 50% Cycling						
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	July 21, 2015	June 11, 2015	2:00 PM	8:00 PM	4:52 PM	447

Domand (kM)	Hour ending	Average					
Demand (KW)	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	Average
Per unit kW - Baseline	0.97	1.22	1.38	1.49	1.53	1.55	1.36
Per unit kW - Event	0.65	0.83	1.03	1.15	1.29	1.36	1.05
Cumulative Overrides	0.6%	1.5%	0.9%	1.2%	4.1%	8.2%	2.7%
Per unit kW reduction	0.32	0.39	0.35	0.33	0.24	0.18	0.30
Per unit kW reduction without overrides	0.32	0.40	0.36	0.34	0.25	0.20	0.31
Total kW without curtailment	432	546	616	666	683	691	606
Total kW with curtailment	291	372	458	516	577	609	471
Total kW load reduction	141	174	158	150	106	83	135



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Resource: Zone J - Group 82	Cycling Strategy	y: 50% Cycling				
Category	Event Day	Baseline Day	Start Time	End Time	Event Refresh	# of Thermostats
Residential	July 21, 2015	August 17, 2015	5:30 PM	9:30 PM	None	265

Domand (kW)	Hour ending	Average					
Demana (KW)	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM		Average
Per unit kW - Baseline	1.31	1.18	0.98	0.80	0.70		0.99
Per unit kW - Event	1.00	0.73	0.67	0.67	0.70		0.76
Cumulative Overrides	0.5%	1.7%	3.1%	4.5%	5.3%		3.0%
Per unit kW reduction	0.31	0.45	0.31	0.13	-0.01		0.24
Per unit kW reduction without overrides	0.31	0.46	0.32	0.14	-0.01		0.24
Total kW without curtailment	348	313	259	212	185		264
Total kW with curtailment	266	195	177	178	187		200
Total kW load reduction	82	119	82	34	-2		63



Rush Hour Report Event Summary

Event Information

Utility	Con Edison
Event date	Jul 21, 2015
Preconditioning start time	4:30 PM
Event start time	5:30 PM
Event end time	9:30 PM
Number of devices	1,849
Number of households	1,089

Participation Summary

	Device Count	Percentage
Sent	1,849	100.00%
Received	1,776	96.05%
Started	1,588	85.88%

	Device Count	Percentage	
Started	1,588	100.00%	
Completed	1,048	65.99%	

Calculated Load Shift Summary

	Avg. Per Device	Avg. Per Household	Aggregate
Baseline HVAC Runtime	99.55 mins	146.10 mins	1916.36 hours
Actual HVAC Runtime	57.63 mins	84.58 mins	1109.35 hours
Duty Cycle Load Shift	32.59%	31.33%	42.11%
Energy Load Shift	3.22 kWh	4.73 kWh	3.72 MWh
Time-Average Power Load Shift	0.81 kW	1.18 kW	930.08 kW

Appendix F: 2015 – 2011 Con Edison Demand Response Event Review

As of September 30, 2015

			· · · · · ·			
County	Network	Subzone		County	Network	Subzone
BK	Bay Ridge	J3		MN	Madison Square	J7
BK	Boro Hall	81		MN	Park Place	J7
BK	Brighton Beach	J3		MN	Pennsylvania	J6
BK	Crown Heights	J8		MN	Plaza	J6
BK	Flatbush	J3		MN	Randalls Island	J2
BK	Ocean Parkway	J3		MN	Rockefeller Cen	J6
BK	Park Slope	J3		MN	Roosevelt	J2
BK	Prospect Park	J8		MN	Sheridan Square	J7
BK	Richmond Hill	J8		MN	Sutton	J2
BK	Ridgewood	J8		MN	Times Square	J6
BK	Sheepshead Bay	J3		MN	Triboro	J8
BK	Williamsburg	J8		MN	Turtle Bay	J2
BX	Central Bronx	8L		MN	Washington Heights	J1
BX	Fordham	J1		MN	Yorkville	J2
BX	Northeast Bronx	J1		QN	Borden	J3
BX	Riverdale	J1		QN	Flushing	J5
BX	Southeast Bronx	J1		QN	Jackson Heights	J5
BX	West Bronx	J2		QN	Jamaica	J5
MN	Battery Park	8L		QN	Long Island Cit	J5
MN	Beekman	J3		QN	Maspeth	J3
MN	Bowling Green	8L		QN	Rego Park	J5
MN	Canal	J7		QN	Richmond Hill -	8L
MN	Central Park	8L		QN	Sunnyside	J3
MN	Chelsea	J7		SI	Fox Hills	J4
MN	City Hall	J7		SI	Fresh Kills	J4
MN	Columbus Circle	J6		SI	Wainwright	J4
MN	Cooper Square	J7		SI	Willowbrook	J4
MN	Cortlandt	8L		SI	Woodrow	J4
MN	Empire	J3		WS	Buchanan	Н
MN	Fashion	J3		WS	Cedar Street	1
MN	Freedom	8L		WS	Elmsford	1
MN	Fulton	8L		WS	Granite Hill	1
MN	Grand Central	J3		WS	Grasslands	1
MN	Greeley Square	J7		WS	Harrison	- I
MN	Greenwich	J7		WS	Millwood West	Н
MN	Harlem	81		WS	Mohansic	н
MN	Herald Square	J6		WS	Ossining West	Н
MN	Hudson	J6		WS	Pleasantville	I
MN	Hunter	J2		WS	Rockview	I
MN	Kips Bay	J7		WS	Washington	I.
MN	Lenox	J8		WS	White Plains	I.
MN	Lincoln Square	J6				

NYISO TDRP - County/Network/Subzone

2015 Demand Response Program Activity

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<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after Derating	<u>Accounts</u>
				Zones A, B, C, D, E, F, G,			
NYISO	SCR	5:00 PM	9:00 PM	H, I, J, K,	Event	-	-

Thursday, February 19, 2015

Monday, May 11, 2015

Administrator	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/Test</u>	MW Pledged after Derating	<u>Accounts</u>
Con Edison	DLRP	1:00 PM	7:00 PM	Beekman	Event	3.1	21
Con Edison	DLRP	1:00 PM	7:00 PM	Empire	Event	1.0	4
Con Edison	DLRP	1:00 PM	7:00 PM	Fashion	Event	0.1	5
Con Edison	DLRP	1:00 PM	7:00 PM	Grand Central	Event	4.4	36

<u>Tuesday, May 12, 2015</u>

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after Derating	<u>Accounts</u>
Con Edison	DLRP	1:00 PM	5:00 PM	Beekman	Event	3.1	21
Con Edison	DLRP	1:00 PM	5:00 PM	Empire	Event	1.0	4
Con Edison	DLRP	1:00 PM	5:00 PM	Fashion	Event	0.1	5
Con Edison	DLRP	1:00 PM	5:00 PM	Grand Central	Event	4.4	36
Con Edison	DLC	1:00 PM	5:00 PM	Beekman	Event	0.03	22
Con Edison	DLC	1:00 PM	5:00 PM	Empire	Event	0.02	11
Con Edison	DLC	1:00 PM	5:00 PM	Fashion	Event	0.02	11
Con Edison	DLC	1:00 PM	5:00 PM	Grand Central	Event	0.01	6

Wednesday, June 24, 2015

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after Derating	<u>Accounts</u>
Con Edison	DLRP	4:00 PM	5:00 PM	All Networks	Test	154.9	759
Con Edison	DLRP SC 11	4:00 PM	5:00 PM		Test	10	1

Sunday, July 19, 2015

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after Derating	<u>Accounts</u>
Con Edison	DLRP	6:14 PM (ASAP)	12:00 AM	Fox Hills	Event	0.6	4
Con Edison	DLC	6:14 PM (ASAP)	12:00 AM	Fox Hills	Event	2.0	1627

Monday, July 20, 2015

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after Derating	<u>Accounts</u>
Con Edison	DLRP	6:00 AM	12:00 PM	Richmond Hill	Event	2.6	11
Con Edison	DLC	6:00 AM	12:00 PM	Richmond Hill	Event	0.5	386
Con Edison	DLRP	2:00 PM	8:00 PM	Fox Hills	Event	0.6	4
Con Edison	DLC	2:00 PM	8:00 PM	Fox Hills	Event	2.0	1627
Con Edison	DLRP	2:21 PM (ASAP)	9:00 PM	Fresh Kills	Event	1.6	14
Con Edison	DLC	2:21 PM (ASAP)	9:00 PM	Fresh Kills	Event	2.6	2143
Con Edison	DLRP	4:09 PM (ASAP)	11:00 PM	Harrison	Event	1.2	16
Con Edison	DLC	4:09 PM (ASAP)	11:00 PM	Harrison	Event	1.1	711
Con Edison	DLRP	4:55 PM (ASAP)	11:00 PM	Pennsylvania	Event	10.0	29
Con Edison	DLC	4:55 PM (ASAP)	11:00 PM	Pennsylvania	Event	0.0	12
Con Edison	DLRP	6:23PM		Crown Heights	Event	DR resources were not called	
Con Edison	DLRP	6:23PM		Ridgewood	Event	DR resources were not called	

<u>Tuesday, July 21, 2015</u>

Administrator	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after Derating	<u>Accounts</u>
Con Edison	DLRP	2:00 PM	8:00 PM	Fox Hills	Event	0.6	4
Con Edison	DLC	2:00 PM	8:00 PM	Fox Hills	Event	2.0	1627
Con Edison	CSRP	11:00 AM	12:00 PM	Zone J	Test	64.9	263
Con Edison	CSRP	2:00 PM	3:00 PM	Zone J	Test	15.3	59
Con Edison	CSRP SC 11	2:00 PM	3:00 PM		Test	11.9	1
Con Edison	CSRP	4:00 PM	5:00 PM	Zone J	Test	16.7	38
Con Edison	CSRP	7:00 PM	8:00 PM	Zone J	Test	19.6	51

Thursday, August 27, 2015

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after Derating	<u>Accounts</u>
NYISO	SCR	1:00 PM	2:00 PM	Zones F,G,H,I,K	Test	-	-
NYISO	SCR	2:00 PM	3:00 PM	Zone J	Test	-	-
NYISO	SCR	3:00 PM	4:00 PM	Zones B, C, D, E	Test	-	-
NYISO	SCR	4:00 PM	5:00 PM	Zone A	Test	-	-

Wednesday, September 9, 2015

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/Test</u>	MW Pledged after Derating	<u>Accounts</u>
Con Edison	CSRP	11:00 AM	12:00 PM	Zone J	Test	0.67	1

2014 Demand Response Program Activity

Thursday, February 6, 2014

Administrator	Program	Time Start	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP - V	3:00 PM	8:00 PM	Time Square	Event	1.14	6

Thursday, February 20, 2014

Administrator	Program	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
NYISO	SCR	4:00 PM	5:00 PM	Zones J, K,	Test	-	-
NYISO	SCR	5:00 PM	6:00 PM	Zones A, B	Test	-	-
				Zones C, D, E, F, G,			
NYISO	SCR	6:00 PM	7:00 PM	H, I	Test	-	-

Tuesday, June 10, 2014

· · · · · · · · · · · · · · · · · · ·								
Administrator	Program	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts	
Con Edison	Modlet	1:00 PM	2:00 PM	Zone J	Test	1.5	1,510	

Tuesday, June 17, 2014

Administrator	Program	Time Start	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLC	5:30 PM	6:30 PM	Zone H	Test	2.1	1,629
Con Edison	DLC	5:30 PM	6:30 PM	Zone I	Test	6.6	4,899
Con Edison	DLC	5:30 PM	6:30 PM	Zone J	Test	17.4	13,510

Thursday, June 26, 2014

Administrator	Program	Time Start	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	4:00 PM	5:00 PM	All Networks	Test	131.9	703
Con Edison	DLRP SC 11	4:00 PM	5:00 PM	*	Test	10	1

is an export demand response resource

			Tuesda	ay, July 8th, 2014			
Administrator	Program	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after Derating	Accounts
Con Edison	CSRP	11:00 AM	12:00 PM	Zone J	Test	60.85	245
Con Edison	CSRP	2:00 PM	3:00 PM	Zone J	Test	26.53	46
Con Edison	CSRP SC 11	2:00 PM	3:00 PM	*	Test		1
Con Edison	CSRP	4:00 PM	5:00 PM	Zone J	Test	12.98	36
Con Edison	CSRP	7:00 PM	8:00 PM	Zone J	Test	16.59	46
			·			1	
			luesday	, August 19, 201	4		
Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after Derating	Accounts
NYISO	SCR	1:00 PM	2:00 PM	Zones F,G,H,I,K	Test	-	-
NYISO	SCR	2:00 PM	3:00 PM	Zone J	Test	-	-
NYISO	SCR	3:00 PM	4:00 PM	Zones B, C, D, E	Test	-	-
NYISO	SCR	4:00 PM	5:00 PM	Zone A	Test	-	-
			Wednesda	ay, August 27, 20)14		
Administrator	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after Derating	Accounts
Con Edison	Modlet	7:00 PM	11:00 PM	Zone J	Test	-	-
			Thursday	y, August 28, 201	.4		
<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after Derating	Accounts
Con Edison	Modlet	2:00 PM	6:00 PM	Zone J	Test	-	-
			Thursday,	September 4, 20)14		
Administrator	Program	Time Start	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after Derating	Accounts
Con Edison	Modlet	7:00 PM	11:00 PM	Zone J	Test	-	-
2013 Demand Response Program Activity

			Friday	, May 24, 2013			
Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	<u>Accounts</u>
Con Edison	DLRP	9:25 AM (ASAP)	4:00 PM	Roosevelt	Event	0.29	3
Con Edison	DLC	9:25 AM (ASAP)	4:00 PM	Roosevelt	Event	0.009	8

Tuesday	/ lune	25	2013
Tuesua	, June	ΖJ,	2015

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	CSRP - Day	2:00 PM	3:00 PM	Zone J	Test	54.30	113
Con Edison	CSRP - Night	7:00 PM	8:00 PM	Zone J	Test	16	67
Con Edison	CSRP - Day	2:00 PM	3:00 PM	*	Test	0.50	1
Con Edison	CSRP - Night	7:00 PM	8:00 PM	*	Test	6	1
Con Edison	DLRP	7:00 PM	12:00 AM	Flatbush	Event	0.44	3
Con Edison	DLC	7:00 PM	12:00 AM	Flatbush	Event	0.48	431

are export demand response resources

Wednesday, June 26, 2013

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	12:00 PM	1:00 PM	All Networks	Test	91.3	583
Con Edison	DLRP	12:00 PM	1:00 PM	*	Test	8	1

is an export demand response resource

Saturday, July 6, 2013

<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	7:00 AM	12:00 PM	Fox Hills	Event	0.45	4
Con Edison	DLC	8:00 AM	12:00 PM	Fox Hills	Event	1.688	1,802

Tuesday, July 9, 2013

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	<u>Accounts</u>
Con Edison	Modlet	6:00 PM	7:00 PM	Zone J	Test	1.9	1,955

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts				
Con Edison	CSRP - Day	12:00 PM	5:00 PM	Zone J	Event	30.47	150				
Con Edison	CSRP - Night	5:00 PM	10:00 PM	Zone J	Event	18.48	91				
Con Edison	CSRP - Day	12:00 PM	5:00 PM	*	Event	0.50	1				
Con Edison	CSRP - Night	5:00 PM	10:00 PM	*	Event	6	1				
Con Edison	DLC	12:00 PM	5:00 PM	Zone J	Event	4.2	3,725				
Con Edison	DLC	5:00 PM	10:00 PM	Zone J	Event	21.8	20,065				
Con Edison	Modlet	12:00 PM	5:00 PM	Zone J	Event	1.9	1,955				
Con Edison	DLRP	5:00 PM	10:00 PM	Fox Hills	Event	0.21	4				
Con Edison	DLC	5:00 PM	10:00 PM	Fox Hills	Event	1.69	1,802				
Con Edison	DLRP	6:00 PM	11:00 PM	Fresh Kills	Event	1.11	8				
Con Edison	DLC	6:00 PM	11:00 PM	Fresh Kills	Event	1.25	1,364				
NYISO	SCR	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	363.30**	5,616				
NYISO	EDRP	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	4**	92				
NYISO	SCR	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-				
NYISO	EDRP	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-				

Monday, July 15, 2013

* are export demand response resources **MW's only within Con Edison's service territory; Zones H, I, & J

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Tuesday, July 16, 2013

<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	CSRP - Day	12:00 PM	5:00 PM	Zone J	Event	30.47	150
Con Edison	CSRP - Night	5:00 PM	10:00 PM	Zone J	Event	18.48	91
Con Edison	CSRP - Day	12:00 PM	5:00 PM	*	Event	0.50	1
Con Edison	CSRP - Night	5:00 PM	10:00 PM	*	Event	6	1
Con Edison	DLC	12:00 PM	5:00 PM	Zone J	Event	4.20	3,725
Con Edison	DLC	5:00 PM	10:00 PM	Zone J	Event	21.80	20,065
Con Edison	Modlet	5:00 PM	10:00 PM	Zone J	Event	1.90	1,955
NYISO	SCR	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	363.30**	5,616
NYISO	EDRP	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	4**	92
NYISO	SCR	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-
NYISO	EDRP	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-
	are expect dom	and research resources					

* are export demand response resources **MW's only within Con Edison's service territory; Zones H, I, & J

Wednesday, July 17, 2013

Administrator	Program	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	CSRP - Day	12:00 PM	5:00 PM	Zone J	Event	30.47	150
Con Edison	CSRP - Night	5:00 PM	10:00 PM	Zone J	Event	18.48	91
Con Edison	CSRP - Day	12:00 PM	5:00 PM	*	Event	0.50	1
Con Edison	CSRP - Night	5:00 PM	10:00 PM	*	Event	6	1
Con Edison	DLC	12:00 PM	5:00 PM	Zone J	Event	4.20	3,725
Con Edison	DLC	5:00 PM	10:00 PM	Zone J	Event	21.80	20,065
Con Edison	Modlet	5:00 PM	10:00 PM	Zone J	Event	1.90	1,955
NYISO	SCR	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	363.30**	5,616
NYISO	EDRP	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	4**	92
NYISO	SCR	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-
NYISO	EDRP	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-

* and are export demand response resources **MW's only within Con Edison's service territory; Zones H, I, & J

Thursday, July 18, 2013

Administrator	Program	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	CSRP - Day	12:00 PM	5:00 PM	Zone J	Event	30.47	150
Con Edison	CSRP - Night	5:00 PM	10:00 PM	Zone J	Event	18.48	91
Con Edison	CSRP - Day	12:00 PM	5:00 PM	*	Event	0.50	1
Con Edison	CSRP - Night	5:00 PM	10:00 PM	*	Event	6	1
Con Edison	DLC	12:00 PM	5:00 PM	Zone J	Event	4.20	3,725
Con Edison	DLC	5:00 PM	10:00 PM	Zone J	Event	21.80	20,065
Con Edison	Modlet	5:00 PM	10:00 PM	Zone J	Event	1.90	1,955
NYISO	SCR	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	363.30**	5,616
NYISO	EDRP	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	4**	92
NYISO	SCR	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-
NYISO	EDRP	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-
Con Edison	DLRP	5:00 PM (ASAP)	12:00 AM	Fresh Kills	Event	1.11	8
Con Edison	DLC	5:00 PM (ASAP)	12:00 AM	Fresh Kills	Event	1.25	1,364
Con Edison	DLRP	10:59 PM	N/A	Williamsburg	Event	DR resources were not called	-

* and are export demand response resources **MW's only within Con Edison's service territory; Zones H, I, & J

Friday	/ Info	19	2013
FILUA	y, July	τэ,	2013

			Frida	y, july 19, 2013			
Administrator	Program	Time Start	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	3:00 AM	N/A	Washington Street	Event	DR resources were not called	-
Con Edison	CSRP - Day	12:00 PM	5:00 PM	Zone J	Event	30.47	150
Con Edison	CSRP - Night	5:00 PM	10:00 PM	Zone J	Event	18.48	91
Con Edison	CSRP - Day	12:00 PM	5:00 PM	*	Event	0.50	1
Con Edison	CSRP - Night	5:00 PM	10:00 PM	*	Event	6	1
Con Edison	DLC	12:00 PM	5:00 PM	Zone J	Event	4.20	3,725
Con Edison	DLC	5:00 PM	10:00 PM	Zone J	Event	21.80	20,065
Con Edison	Modlet	5:00 PM	10:00 PM	Zone J	Event	1.90	1,955
NYISO	SCR	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	363.30**	5,616
NYISO	EDRP	1:00 PM	6:00 PM	Zones G, H, I, J, K	Event	4**	92
NYISO	SCR	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-
NYISO	EDRP	1:00 PM	6:00 PM	Zones A, B, C, D, E, F	Event	N/A	-
Con Edison	DLRP	11:03 PM	N/A	South East Bronx	Event	DR resources were not called	-

* and are export demand response resources **MW's only within Con Edison's service tenitory; Zones H, I, & J

	Saturday, July 20, 2013										
Administrator	Program	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts				
Con Edison	DLRP	1:12 AM	N/A	Fordham	Event	DR resources were not called	-				

Thursday, August 8, 2013											
Administrator	<u>Program</u>	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts				
NYISO	SCR	1:00 PM	2:00 PM	Zones B, C, D, E	Test	DR resources were not called	-				
NYISO	SCR	2:00 PM	3:00 PM	Zones A	Test	DR resources were not called	-				
NYISO	SCR	3:00 PM	4:00 PM	Zones J	Test	DR resources were not called	-				
NYISO	SCR	4:00 PM	5:00 PM	Zones F, G, H, I, K	Test	DR resources were not called	-				

	Thursday, October 17, 2013										
Administrator	Program	Time Start	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts				
NYISO	SCR	3:00 PM	4:00 PM	Zones J	Test	DR resources were not called	-				

Wednesday, October 30, 2013										
<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	<u>Accounts</u>			
Con Edison	DLRP	6:58 PM	7:52 PM	Brighton Beach	Event	DR resources were not called	-			
Con Edison	DLRP	6:58 PM	7:52 PM	Flatbush	Event	DR resources were not called	-			

2012 Demand Response Program Activity

Administrator Program Time Start Time End Zone/Network Event/Test MW Pledged after De-rating	
	Accounts
NTISO SCR 1:00 PM 6:00 PM Zones A, B, C, D, E, F, Event 436.09* G, H, I, J, K G, H, I, J, K	2,517

*MW's only within Con Edison's service territory; Zones H, I, & J

Wednesday, June 20, 2012

<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	4:57 PM (ASAP)	12:00 AM	Williamsburg	Event	2.95	19
Con Edison	DLRP	4:57 PM (ASAP)	12:00 AM	Sheepshead Bay	Event	1.53	8
Con Edison	DLRP	4:57 PM (ASAP)	12:00 AM	Jamaica	Event	2.72	19
Con Edison	DLC	4:57 PM (ASAP)	12:00 AM	Williamsburg	Event	0.48	357
Con Edison	DLC	4:57 PM (ASAP)	12:00 AM	Sheepshead Bay	Event	0.38	288
Con Edison	DLC	4:57 PM (ASAP)	12:00 AM	Jamaica	Event	0.75	664
Con Edison	DLRP	5:18 PM (ASAP)	1:00 AM	Maspeth	Event	1.46	21
Con Edison	DLC	5:18 PM (ASAP)	1:00 AM	Maspeth	Event	0.42	322
Con Edison	DLRP	6:18 PM (ASAP)	2:00 AM	Richmond Hill	Event	1.36	14
Con Edison	DLC	6:18 PM (ASAP)	2:00 AM	Richmond Hill	Event	0.51	433
NYISO	SCR	2:00 PM	6:00 PM	Zones C,G,H,I,J	Event	436.09*	2,517
NYISO	EDRP	2:00 PM	6:00 PM	Zones C,G,H,I,J	Event	58.97*	55

*MW's only within Con Edison's service territory; Zones H, I, & J

Thursday, June 21, 2012

Administrator	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/Test	MW Pledged after De-rating	Accounts
Con Edison	CSRP - Day	12:00 PM	5:00 PM	Zone J	Event	50.20	230
Con Edison	CSRP - Night	5:00 PM	10:00 PM	Zone J	Event	11.93	66
Con Edison	DLC	12:00 PM	5:00 PM	Zone J	Event	3.47	1,995
Con Edison	DLC	5:00 PM	10:00 PM	Zone J	Event	31.64	22,609
Con Edison	CSRP - Night	5:00 PM	10:00 PM	**	Event	11.40	1
Con Edison	RSAP	5:00 PM	10:00 PM	Zone J	Event	0.14	145
Con Edison	DLRP	8:00 AM	3:00 PM	Flushing Network	Event	3.52	20
Con Edison	DLRP	8:00 PM	3:00 AM	Park Slope	Event	1.27	21
Con Edison	DLRP	9:00 PM	4:00 AM	Sheepshead Bay	Event	1.53	8
Con Edison	Modlet	5:00 PM	10:00 PM	Zone J	Event	0.38	966
NYISO	SCR	1:00 PM	6:00 PM	Zones A,B,C,D,E,F,G,H,I,J,K	Event	436.09*	2,517
NYISO	EDRP	1:00 PM	6:00 PM	Zones A,B,C,D,E,F,G,H,I,J,K	Event	58.97*	55

MW's only within Con Edison's service territory; Zones H, I, & J
is an export demand response resource

Friday, June 22, 2012

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	7:00 AM	2:00 PM	Flatbush	Event	1.07	9
Con Edison	DLRP	5:00 PM	10:00 PM	Williamsburg	Event	2.95	19
Con Edison	DLRP	12:00 PM	1:00 PM	All Networks	Test	132.50	806
Con Edison	DLRP	12:00 PM	1:00 PM	**	Test	11.40	1
NYISO	SCR	1:00 PM	6:00 PM	Zones G,H,I,J,K	Event	436.09*	2,517
NYISO	EDRP	1:00 PM	6:00 PM	Zones G,H,I,J,K	Event	58.97*	55
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•MW's only within Con Edison's service territory; Zones H, I, & J •• is an export demand response resource

Wednesday, July 04, 2012

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after De-rating	Accounts
Con Edison	DLRP	9:06 PM (ASAP)	2:00 AM	Flatbush	Event	1.07	9

Thursday, July 05, 2012

Administrator	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	3:00 PM	8:00 PM	Crown Heights Network	Event	1.16	9
Con Edison	DLRP	10:30 PM	N/A	South East Bronx	Event	DR resources were not called	-

				Friday, July 06, 2012			
<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after De-rating	<u>Accounts</u>
Con Edison	Modlet	6:00 PM	10:00 PM	Zone J	Event	0.38	966
NYISO	TDRP	3:00 PM	11:00 PM	J1, J3, J8	Event	Program was on standby but not called	-
NYISO	DLC	4:00 PM	5:00 PM	Zones I,J	Test	21.68	18,067

Saturday, July 07, 2012

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	<u>Accounts</u>
Con Edison	Modlet	6:00 PM	10:00 PM	Zone J	Event	0.38	966
NYISO	TDRP	3:00 PM	11:00 PM	J1, J3, J8	Event	Program was on standby but not called	-

Monday, July 16, 2012

Administrator	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after De-rating	<u>Accounts</u>
NYISO	TDRP	3:00 PM	11:00 PM	J3	Event	Program was on standby but not called	-
Con Edison	DLRP	1:20 PM (ASAP)	9:00 PM	Turtle Bay	Event	1.61	16

Tuesday, July 17, 2012

<u>Administrator</u>	Program	Time Start	<u>Time End</u>	Zone/Network	Event/Test	MW Pledged after De-rating	Accounts
NYISO	TDRP	6:00 PM	11:00 PM	J3	Event	55.00*	Not Available
NYISO	TDRP	6:00 PM	11:00 PM	81	Event	Program was on standby but not called	-
NYISO	SCR	1:00 PM	7:00 PM	Zones A, B, C, D, E, F, G, H, I, J, K	Event	Program was on standby but not called	-
Con Edison	DLC	3:00 PM	8:00 PM	Bay Ridge, Fashion, Empire, Grand Central, Borden	Event	0.34 - Network Initiated Peak Shaving	255
Con Edison	DLC	5:00 PM	10:00 PM	Brighton Beach, Flatbush, Ocean Parkway, Park Slope, Sheepshead Bay, Beekman, Maspeth, Sunnyside	Event	2.46 - Network Initiated Peak Shaving	1,891
Con Edison	Modlet	5:00 PM	10:00 PM	Zone J	Event	0.38	966

*J3 MW's may not be indicative of actual demand reduction due to voluntary basis and as large commercial customer base called outside general commercial hours.

Wednesday, July 18, 2012

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/Test	MW Pledged after De-rating	<u>Accounts</u>
Con Edison	DLRP	7:09 AM (ASAP)	3:00 PM	Sutton	Event	4.59	21
Con Edison	CSRP-Day	12:00 PM	5:00 PM	Zone J	Event	50.20	230
Con Edison	CSRP - Night	5:00 PM	10:00 PM	Zone J	Event	11.93	66
Con Edison	CSRP - Night	5:00 PM	10:00 PM	**	Event	11.40	1
Con Edison	RSAP	5:00 PM	10:00 PM	Zone J	Event	0.14	145
Con Edison	DLRP	5:09 PM (ASAP)	12:30 AM	Ocean Parkway	Event	1.39	12
Con Edison	DLRP	9:00 PM	N/A	Flushing	Event	DR resources were not called	-
NYISO	SCR	2:10 PM	6:00 PM	Zones G, H, I, K	Event	48.09*	126
NYISO	SCR	1:00 PM	6:00 PM	Zone J	Event	388.00	2,391
NYISO	TDRP	6:00 PM	10:00 PM	J3	Event	55.00***	Not Available

MW's only within Con Edison's service territory; Zones H, I, & J

** is an export demand response resource

***J3 MW's may not be indicative of actual demand reduction due to voluntary basis and as large commercial customer base called outside general commercial hours.

				Tuesday, July 24, 2012			
<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	<u>Accounts</u>
NYISO	TDRP	3:00 PM	10:00 PM	J3	Event	Program was on standby but not called	-
				Thursday, July 26, 2012			
Administrator	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
NYISO	TDRP	3:00 PM	10:00 PM	J3	Event	Program was on standby but not called	-
				Friday, July 27, 2012			
Administrator	Program	Time Start	Time End	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	<u>Event/ Test</u>	MW Pledged after De-rating	<u>Accounts</u>
NYISO	TDRP	3:00 PM	10:00 PM	J3	Event	Program was on standby but not called	-

Thursda	ay, August	02, 2012

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	12:00 PM	5:00 PM	Riverdale	Event	1.40	11
NYISO	SCR	4:00 PM	5:00 PM	E, F, G, H, I	Test	48.09*	126
NYISO	SCR	5:00 PM	6:00 PM	J,K	Test	388.00*	2,391

*MW's only within Con Edison's service territory; Zones H, I, & J

Thursday, August 09, 2012

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	1:00 AM	N/A	Sheridan Square	Event	DR resources were not called	-

Wednesday, August 15, 2012

<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	<u>Accounts</u>
Con Edison	DLRP	5:00 PM	N/A	Sheepshead Bay	Event	DR resources were not called	-
Con Edison	Modlet	5:00 PM	10:00 PM	Zone J	Event	0.38	966

Friday, August 24, 2012

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	11:00 AM	N/A	West Bronx	Event	DR resources were not called	-

				111009, August 51, 2017	_		
<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	<u>Accounts</u>
Con Edison	DLRP	5:30 AM	N/A	Central Park	Event	DR resources were not called	-

Friday, August 31, 2012

Sunday, September 16, 2012

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Pledged after De-rating	Accounts
Con Edison	DLRP	10:48 AM (ASAP)	7:00 PM	Brighton Beach	Event	1.17	8
Con Edison	DLRP	10:48 AM (ASAP)	7:00 PM	Flatbush	Event	1.07	9

2011 Demand Response Program Activity

Wednesday, June 08, 2011

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Reduction Achieved	<u>Accounts</u>
Con Edison	DLRP	3:00 P.M.	4:00 P.M.	All	Test	127.62	701
Con Edison	DLC	3:00 P.M.	4:00 P.M.	All	Test	28.63	20,442
Con Edison	RSAP	4:00 P.M.	5:00 P.M.	J	Test	0.01	110

Thursday, June 09, 2011

<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Reduction Achieved	Accounts
Con Edison	CSRP	2:00 P.M.	3:00 P.M.	All	Test	17.04	115
Con Edison	CSRP	5:00 P.M.	6:00 P.M.	All	Test	4.16	30

Tuesday, July 19, 2011

<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Reduction Achieved	Accounts
NYISO	SCR (ICAP)	3:00 P.M.	4:00 P.M.	H&I	Test	42.20	84
NYISO	SCR (ICAP)	4:00 P.M.	5:00 P.M.	J	Test	473.53	1,346

Thursday, July 21, 2011

<u>Administrator</u>	<u>Program</u>	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/Test	MW Reduction Achieved	<u>Accounts</u>
Con Edison	RSAP	11:00 A.M.	7:00 P.M.	l	Event	0.01	110
Con Edison	CSRP - Day	12:00 P.M.	5:00 P.M.	l	Event	21.40	115
Con Edison	CSRP - Night	5:00 P.M.	10:00 P.M.	l	Event	6.20	30
Con Edison	DLC	1:00 P.M.	6:00 P.M.	All	Event	32.38	20,442
NYISO	SCR (ICAP)	1:00 P.M.	6:00 P.M.	All	Event	515.73	1,430
NYISO	EDRP	1:00 P.M.	6:00 P.M.	All	Event	65.55	48

Administrator	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Reduction Achieved	<u>Accounts</u>
Con Edison	CSRP - Day	12:00 P.M.	5:00 P.M.	J	Event	29.52	115
Con Edison	CSRP - Night	5:00 P.M.	10:00 P.M.	J	Event	6.72	30
Con Edison	DLRP	7:00 A.M.	3:00 P.M.	Elmsford	Event	0.30	9
Con Edison	DLC	7:00 A.M.	3:00 P.M.	Elmsford	Event	0.78	809
Con Edison	DLRP	7:00 A.M.	3:00 P.M.	Maspeth	Event	2.66	18
Con Edison	DLC	7:00 A.M.	3:00 P.M.	Maspeth	Event	0.37	275
Con Edison	DLRP	6:00 P.M.	11:00 P.M.	Richmond Hill	Event	1.98	14
Con Edison	DLC	6:00 P.M.	11:00 P.M.	Richmond Hill	Event	0.34	163
Con Edison	DLRP	6:00 P.M.	11:00 P.M.	Fox Hills	Event	0.79	5
Con Edison	DLC	6:00 P.M.	11:00 P.M.	Fox Hills	Event	1.66	1,493
Con Edison	DLC	6:00 P.M.	11:00 P.M.	Ossining West	Event	0.50	384
Con Edison	DLRP	6:00 P.M.	11:00 P.M.	Sheepshead Bay	Event	3.20	8
Con Edison	DLC	6:00 P.M.	11:00 P.M.	Sheepshead Bay	Event	0.27	249
Con Edison	DLRP	7:31 P.M. (ASAP)	11:00 P.M.	Granite Hill	Event	0.90	4
Con Edison	DLC	7:31 P.M. (ASAP)	11:00 P.M.	Granite Hill	Event	0.63	590
Con Edison	DLRP	8:19 P.M. (ASAP)	11:00 P.M.	Buchanan	Event	-0.01	1
Con Edison	DLC	8:19 P.M. (ASAP)	11:00 P.M.	Buchanan	Event	0.70	653
Con Edison	DLRP	9:03 P.M. (ASAP)	6:00 A.M.	Ridgewood	Event	-0.12	9
Con Edison	DLC	9:03 P.M. (ASAP)	6:00 A.M.	Ridgewood	Event	0.08	143
Con Edison	DLRP	9:03 P.M. (ASAP)	6:00 A.M.	Rego Park	Event	0.23	12
Con Edison	DLC	9:03 P.M. (ASAP)	6:00 A.M.	Rego Park	Event	0.43	526
NYISO	SCR (ICAP)	12:00 P.M.	6:00 P.M.	J	Event	473.53	1,346
NYISO	EDRP	12:00 P.M.	6:00 P.M.	J	Event	61.85	39
NYISO	SCR (ICAP)	1:00 P.M.	6:00 P.M.	H&I	Event	42.20	84
NYISO	EDRP	1:00 P.M.	6:00 P.M.	H&I	Event	3.70	9

Friday July 22, 2011

Saturday, July 30, 2011

<u>Administrator</u>	Program	<u>Time Start</u>	<u>Time End</u>	Zone/Network	Event/ Test	MW Reduction Achieved	<u>Accounts</u>
Con Edison	DLRP	12:00PM	12:00 A.M.	Central Park	Event	0.21	8