

BQDM QUARTERLY
EXPENDITURES &
PROGRAM REPORT

Q4 - 2018

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1.0 Background

On December 12, 2014, the New York Public Service Commission (“Commission”) issued its *Order Establishing Brooklyn/Queens Demand Management Program* (“Order”).¹ The Order requires Consolidated Edison Company of New York, Inc. (“Con Edison” or the “Company”) to submit quarterly reports to the Commission on its “expenditures and program activity” that include all relevant details including project costs, project in-service dates, Monthly Adjustment Clause (“MAC”) recoveries, incremental costs incurred, operational savings, and all other benefits. This is the sixteenth Brooklyn Queens Demand Management (“BQDM”) quarterly report (“Report”) and primarily covers expenditures and program activity for the fourth quarter of 2018.

2.0 Executive Summary

2.1 Costs and Recovery

The Company spent \$13.68 million on the BQDM Program during the fourth quarter 2018, and has spent an aggregate of \$94.86 million to date (see Figure 1).

¹ Case 14-E-0302, *Petition of Consolidated Edison Company of New York, Inc. for Approval of Brooklyn Queens Demand Management Program*, Order Establishing Brooklyn/Queens Demand Management Program (issued December 12, 2014).

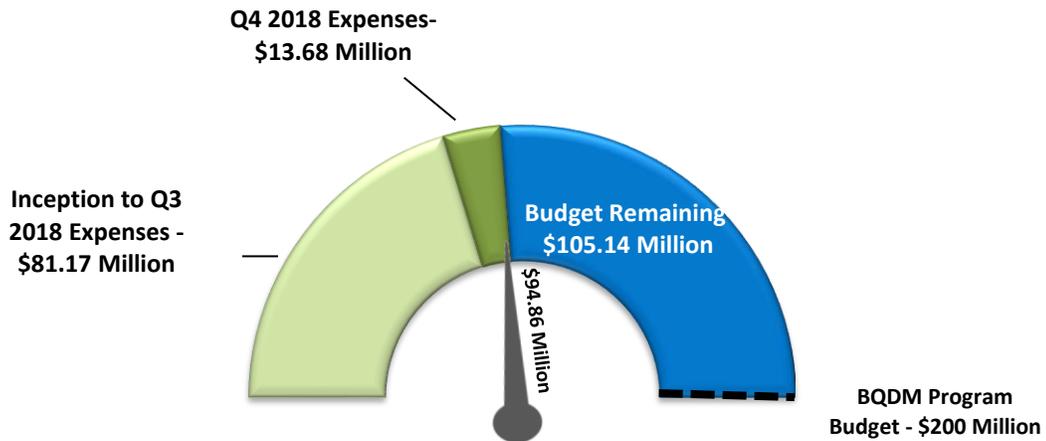


Figure 1: BQDM Program Budget and Expenditures²

Prior to January 1, 2017, costs incurred were recovered through the MAC in accordance with the Order. With the Commission’s approval on January 25, 2017 of the Con Edison electric rate plan in Case 16-E-0060, beginning January 2017 BQDM expenditures are being recovered through base rates.³ The Company incurred expenses related to efforts undertaken to address reliability needs in the BQDM target area (“BQDM Area” or “BQDM Target Area” or “Target

² Note that the costs incurred during the quarter may include expenses related to services rendered prior to the quarter if the invoices were processed during the quarter. Similarly, the costs incurred during the quarter may not include all expenses related to services rendered during the quarter, if the invoices related to such services were not processed during the quarter. Total expenses from the previous quarter have been updated to account for \$100,000 that was previously not captured during utility-side and customer-side solutions reconciliation.

³ Case-16-E-0060, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service*, Order Approving Electric and Gas Rate Plans (issued January 25, 2017), p. 38.

Area”)⁴ prior to the issuance of the Order. Those efforts were pursued through the then existing Targeted Demand Side Management (“TDSM”) program.⁵

Table 1: BQDM Program Fourth Quarter 2018 Expenditures (\$M)

Program/Projects	Oct-18	Nov-18	Dec-18	Q4 2018 Total	2018 BQDM	BQDM Total
Customer-Side Solutions						
Incentives	\$ 0.81	\$ 9.06	\$ 0.84	\$ 10.71	\$ 16.53	\$ 58.24
Program Implementation & Administration	\$ 0.03	\$ 0.10	\$ 0.04	\$ 0.17	\$ 1.16	\$ 4.65
Sales, Marketing, & Training	\$ 0.02	\$ 0.35	\$ 1.29	\$ 1.67	\$ 1.64	\$ 2.68
Technology, Measurement and Verification (M&V), and Evaluation	\$ 0.23	\$ 0.04	\$ 0.21	\$ 0.48	\$ 1.05	\$ 8.83
Third-Party Oversight	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Market Research & Analytics	\$ -	\$ 0.24	\$ 0.42	\$ 0.66	\$ 0.67	\$ 0.69
Total Customer-Side Solutions	\$ 1.09	\$ 9.80	\$ 2.79	\$ 13.68	\$ 21.05	\$ 75.08
Utility-Side Solutions						
Program Implementation & Administration	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 3.95	\$ 19.65
Technology, Measurement and Verification (M&V), and Evaluation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.13
Total Utility-Side Solutions	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 3.95	\$ 19.78
Total Customer-Side Solutions and Utility-Side Solutions	\$ 1.09	\$ 9.80	\$ 2.79	\$ 13.68	\$ 25.00	\$ 94.86

The work to implement the load relief programs (described in more detail in Section 3 of this Report), research new technologies, manage request for information (“RFI”), request for proposals (“RFP”), other acquisition activities, and develop foundational elements of the BQDM Program (i.e., accounting protocols, regulatory reporting, marketing approaches, and outreach) was primarily conducted by Con Edison employees. The Company developed a General Accounting Procedure (“GAP”)⁶ for treatment of costs and collections associated with the BQDM Program and established internal billing accounts to properly manage program expenses. The Company recovered \$4,501,500 through base rates for the fourth quarter 2018,

⁴ References to Brooklyn-Queens Area in this filing refer to north central and eastern Brooklyn neighborhoods, including parts of Greenpoint, East Williamsburg, Bushwick, Bedford-Stuyvesant, Crown Heights, East Flatbush, Brownsville, and East New York, and southwestern Queens neighborhoods, including parts of Richmond Hill, Howard Beach, Broad Channel, Ozone Park, South Ozone Park, Woodhaven and Kew Gardens.

⁵ Case 09-E-0115, *Proceeding on Motion of the Commission to Consider Demand Response Initiatives*, Order Adopting with Modifications a New Targeted Demand Side Management Program for Consolidated Edison Company of New York, Inc. (issued June 1, 2011).⁵ In order to accurately reflect all costs incurred to address the projected overload in the BQDM target area and to maintain a single set of accounting rules on all expenses related to the BQDM Program, charges incurred under the TDSM program that are related to the BQDM target area have been reclassified to the BQDM Program, so that the Company can collect all BQDM Program related charges incurred before or after the issuance of the Order as BQDM Program costs.

⁶ The Company filed the GAP with the Commission on February 10, 2015. See <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={59F25E6A-7ABA-4D95-BBD2-F6142F90C798}>.

resulting in a total of \$37,157,864 from program inception to date, including recovery through the MAC and NYPA surcharges prior to 2017.

Due to the success of implementation in BQDM, the Company anticipates that the total cost of BQDM measures will be under the cap. As a result, the amount of requested BQDM recovery has decreased in the Company's latest rate filing.

2.2 Projects Summary

The Company has achieved approximately 50.76 MW of peak hour non-traditional utility-side and customer-side solutions installed by the end of fourth quarter of 2018.

The Company continued to make progress in contracting and installing energy efficiency measures through incentive adders to two existing Energy Efficiency Transition Implementation Plan ("ETIP") programs - the Commercial Direct Install ("CDI") and Multi-Family Energy Efficiency ("MFEE") programs as well as through efficiency upgrades in the residential, commercial, and public building sectors, and implementation of various solutions such as fuel cells, CHP, and demand response. By the end of the fourth quarter of 2018, customer side load relief commitments reached over 39.7 MW, of which over 34.7 MW of load relief measures were operational at the 9-10 PM hour (Section 3.1 presents a detailed account of activities on various customer-side solutions). The Company achieved this load relief through installation of efficiency and demand management measures at approximately 7,400 small businesses, 1,800 multi-family buildings, 27,500 1-4 family residences, and various commercial properties in the community.

The Company met the reliability needs for 2018 using a combination of customer-side and non-traditional utility-side solutions and continues to adopt additional measures that will provide load relief beyond 2018.

The charts in the quarterly reports provide useful illustrations of the diverse nature of non-traditional solutions that are not all available during the entire forecasted overload period and that are insufficiently defined by use of either a singular peak demand MW metric or the maximum load relief provided by each of the solutions during the overload period. Figure 2 below illustrates the anticipated hourly load relief provided by solutions that have already been implemented and were operational by the end of the fourth quarter 2018.

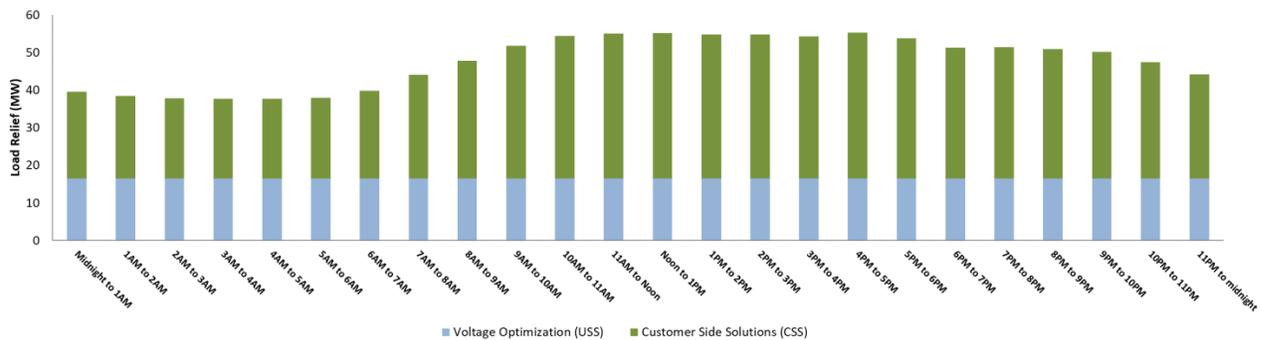


Figure 2: BQDM Load Relief Progress

Table 2 below provides a summary of the opportunities the Company has pursued. The Company’s efforts during the fourth quarter are described in greater detail in Section 3 of this Report.

Table 2: BQDM Program Activity

	Design Stage*	Deployment Stage*
<u>Customer-side Solutions</u>		
Commercial Direct Install		√
Multi-family Energy Efficiency		√
Residential Energy Efficiency Program(s)		√
Bring Your Own Thermostat Adder (“BYOT”)		√
Virtual Building Audits		√
New York City Housing Authority		√
Direct Customer Activity		√
Dynamic Resource Auction**		√
Fuel Cells		√
Queens Resiliency Microgrid	NP	NP
City Agency Solutions		√
Commercial Refrigeration		NP
Combined Heat and Power (“CHP”)		√
Battery Storage		√
BQDM Extension Auction (“XA”)		√
<u>Utility-side Solutions</u>		
Distributed Energy Storage System		√
Distributed Generation (DC-Link)	NP	NP
Voltage Optimization		√
Solar Photovoltaic (PV) Pilot	NP	NP
Fuel Cell	NP	NP
<u>Foundational Elements</u>		
Distributed Energy Resource Evaluation Tool		√
Solutions Technology Validation		√
Community Engagement and Outreach		√
Measurement & Verification Activities		√
Demand Management Tracking System		√

* - “Design Stage” refers to early efforts initiated by the Company to determine whether, and if yes, how to proceed to implementation in a manner consistent with the objectives of the BQDM Program. “Deployment Stage” refers to implementation efforts that are substantially complete or well underway to meet the objectives of the BQDM Program. “NP” refers to efforts the Company is no longer pursuing and does not expect to be a part of the BQDM Program portfolio of solutions.

** - “Dynamic Resource Auction” refers to A market-driven approach to procure demand response type resources with specific performance attributes.

2.3 Operational Savings and Other Benefits

The Company defines “operational savings” as reductions in costs incurred or expected to be incurred by the Company for the operation of the electric sub-transmission and distribution system supporting the BQDM Target Area as a result of BQDM solutions. No quantifiable operational savings in electric sub-transmission and distribution operations have yet been identified as a direct result of BQDM Program activities conducted in the fourth quarter of 2018 or earlier.

3.0 Program Activity

3.1 Customer-Side Solutions

In the fourth quarter of 2018, the programs continued to enable the Company to positively engage members of the targeted community as the Company continued to develop additional resources that can provide critical load relief in the BQDM Target Area. Fourth quarter 2018 program activities are detailed in the following sections.

Commercial Direct Install Program

The CDI Adder initiative, which was initiated on August 1, 2014, is open to commercial customers with a peak demand of 300 kW or less.⁷ Participating customers receive a walk-through survey identifying cost-effective electric efficiency measures. Customers may elect to have all or any of the recommended measures installed. The ETIP CDI Program provides a payment of up to 70 percent of costs for the selected measures and the customer is typically responsible for the remaining amount. Under the CDI Adder initiative, customers in the BQDM Area receive an additional incentive, effectively receiving installation of eligible measures at no cost. The Company delivers this program through an implementation contractor responsible for the sales and installation of measures.

As of December 31, 2018, approximately 11.98 MW of peak hour load reduction projects, which are equivalent to more than 37.8 MW as measured under the ETIP guidelines,⁸ involving approximately 7,400 small businesses, are under contract.⁹ . These efficiency measures are

⁷ Beginning with the first quarter of 2016, the Company has offered the CDI adder program to all commercial customers in the BQDM Target Area that have a peak demand of less than 300 kW, an increase from the 110 kW threshold that was used through the end of 2015.

⁸The Company is reporting expected load relief provided by energy efficiency resource during the peak hour of the BQDM sub-transmission constraint. For the purposes of reporting on ETIP programs the Company only reports load relief quantities for CDI and MFEE on the basis of a system (or New York Control Area ("NYCA")) coincidence measurement as calculated using the TRM. Because the TRM assumes that external lighting would be off during afternoon peak hours, ETIP programs cannot claim any demand reduction benefits from external lighting upgrades. In contrast, the BQDM Program benefits greatly from external lighting upgrades, which provide load relief coincident with the BQDM needs in the evening hours. For external lighting upgrades, the Company has, since the first BQDM quarterly report, included their contribution on a delta-Watt basis in the gross demand reduction value when reporting figures attributed to the ETIP methodology.

⁹ Program savings and number of small businesses have been updated to reflect a value that provides installations to date, with inclusion of projects that have been contracted and are expected to be installed at a future date. These updates are made due to factors such as delay in projects or a customer who may have changed their minds on pursuing a project. As a result of this change, the contracted values have decreased from what was reported in previous quarterly reports.

estimated to have achieved over 151 GWh of annual energy reduction per ETIP guidelines¹⁰ since the inception of the CDI Adder initiative. The outreach to these small businesses, in an area that continues to undergo considerable change, continues to be a positive development for the BQDM Program. Participation by these businesses is delivering direct benefits to an important segment of the community, and contributing toward establishing a positive experience in the wider community as the CDI Adder initiative progresses.

The geographical distribution of the participants in the CDI Adder initiative as of December 31, 2018 is graphically portrayed in Figure 3.¹¹

¹⁰ ETIP (the successor program to the Energy Efficiency Portfolio Standard or EEPS program referred to in BQDM quarterly reports prior to second quarter 2016) guidelines are based on the New York State Technical Reference Manual (“TRM”), which has a standard set of deemed hours of operation for various businesses in order to estimate annual energy savings.

¹¹ The graphical representation of the network boundaries reflects approximate geographical boundaries. Some customers that seem to be outside of the boundaries are within the electrical circuits of the BQDM networks.

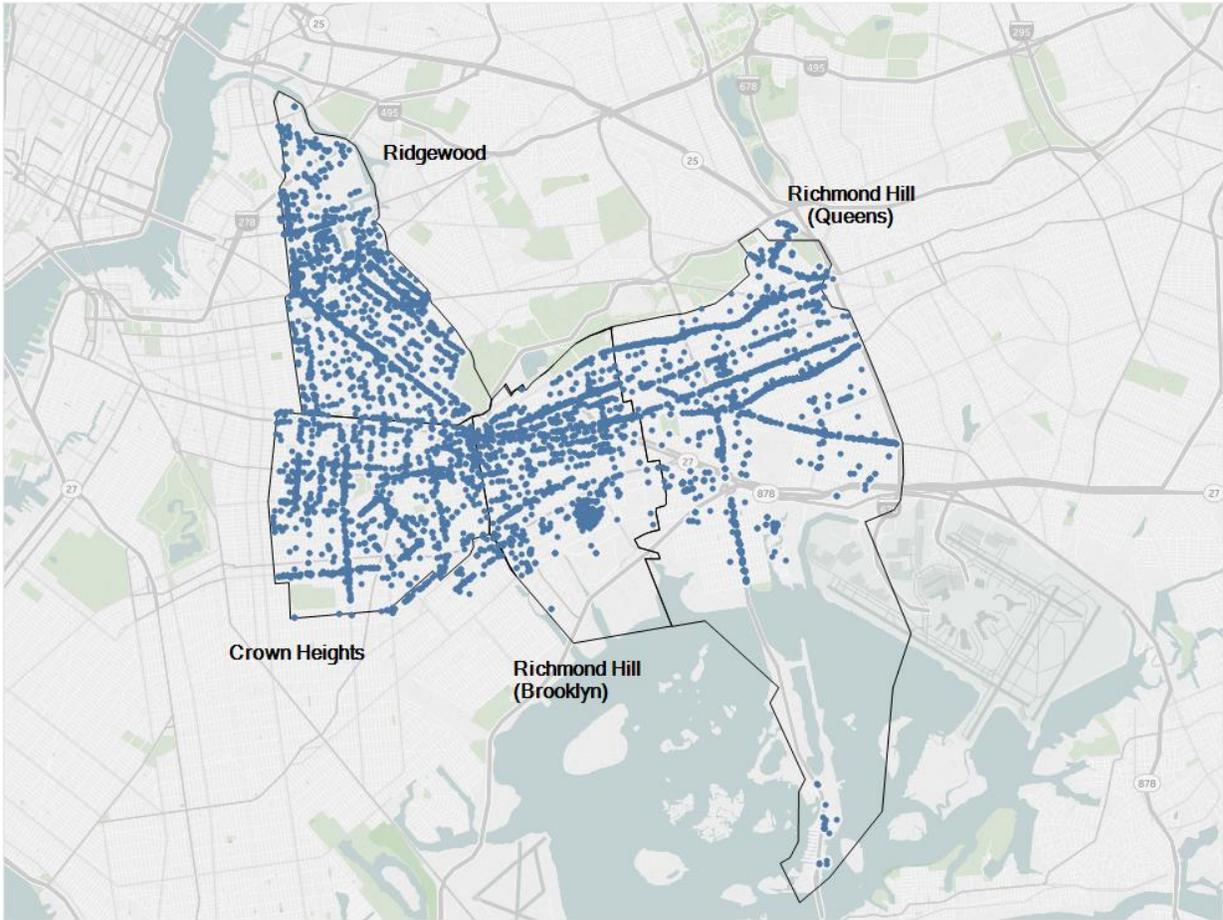


Figure 3: BQDM Commercial Direct Install Project Locations

Customer response continues to be strongly driven by a focused outreach to small businesses in the community. Estimated hourly load relief from the CDI Adder activities is presented in Figure 4.

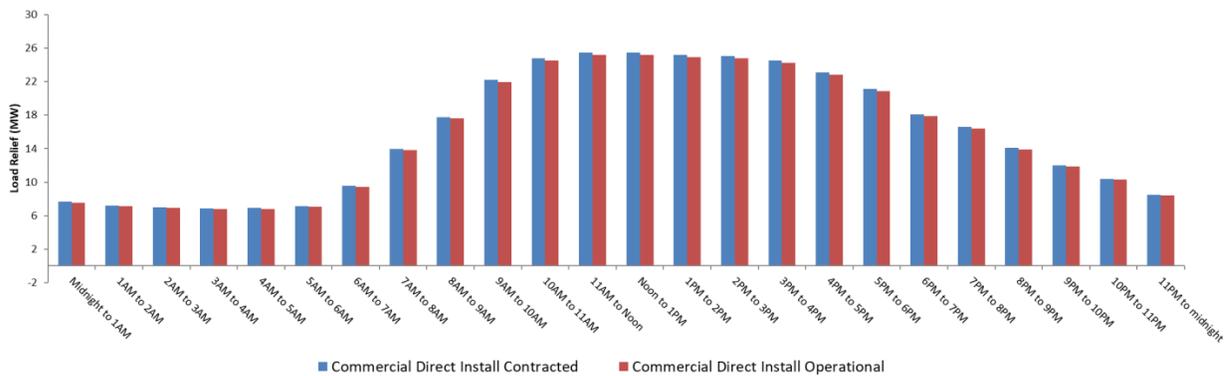


Figure 4: Commercial Direct Install Contracted vs. Operational Hourly Load Relief

Multi-Family Energy Efficiency Program

The Company developed an adder initiative for the existing ETIP MFEE Program on December 10, 2014, which offers multi-family dwellings of five units or greater a free survey identifying potential load-reduction measures.¹² The MFEE Program includes both measures installed within the dwelling units and measures installed within the indoor and outdoor common areas. Under the ETIP program, 100 percent of the cost of measures installed within the dwelling units is covered, but the program requires a property owner or building manager contribution for a percentage of the cost of measures installed in the common areas. Under the BQDM MFEE Adder initiative, eligible buildings within the BQDM networks will not have out-of-pocket costs for measures installed in dwelling units, and will receive the measures in common areas at no cost to the property owner or the building manager. The MFEE Program is delivered through a central implementation contractor that is utilizing multiple independent, participating contractors within the BQDM area.

¹² Beginning with the first quarter of 2016, the Company has offered the MFEE adder program to all multi-family buildings in the BQDM Target Area that have five units or greater, without the restriction that the building must have less than or equal to 75 units; a 75-unit restriction was in effect through the end of 2015.

As of December 31, 2018, the Company has contracted load reduction for in-dwelling and common area measures 1,800 buildings, with more than 8,900 individual apartments representing over 5.1 MW of peak hour load relief, which is equivalent to more than 8.3 MW as measured under the ETIP guidelines.¹³

Collectively, the measures installed at the participants' premises are expected to result in more than 34.4 GWh of reduction in annual energy consumption per ETIP guidelines for the MFEE adder initiative since its inception. The MFEE Adder initiative delivers approximately 85 percent of its load reductions through the common area measures. Given that multi-family buildings vary in size from five units and above per building and the MFEE program includes a mix of common area and in-unit measures, the annual savings per building varies widely. The MFEE Adder initiative provides valuable load relief that typically extends into late evenings, and coincides with the extended network peaks of the BQDM Target Area. Estimated hourly load relief from MFEE activities is presented in Figure 5.

¹³ Program savings and number of buildings and apartments have been updated to reflect installations to date, with inclusion of projects that have been contracted and are expected to be installed at a future date.

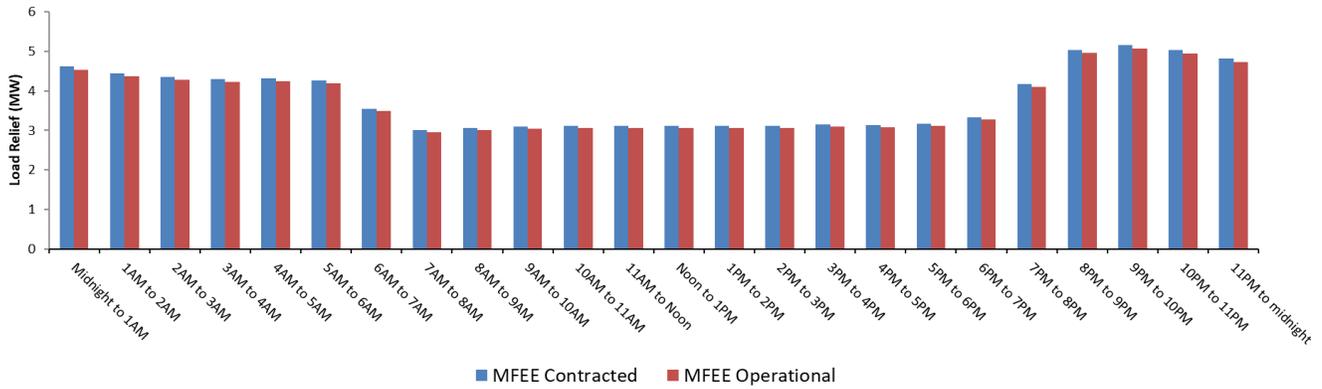


Figure 5: Multifamily Energy Efficiency Program Contracted vs. Operational Hourly Load Relief

The geographical distribution of the participants in the MFE Adder initiative as of December 31, 2018 is graphically portrayed in Figure 6.¹⁴

¹⁴ The graphical representation of the network boundaries reflects approximate geographical boundaries. Some customers that seem to be outside of the boundaries are within the electrical circuits of the BQDM networks.

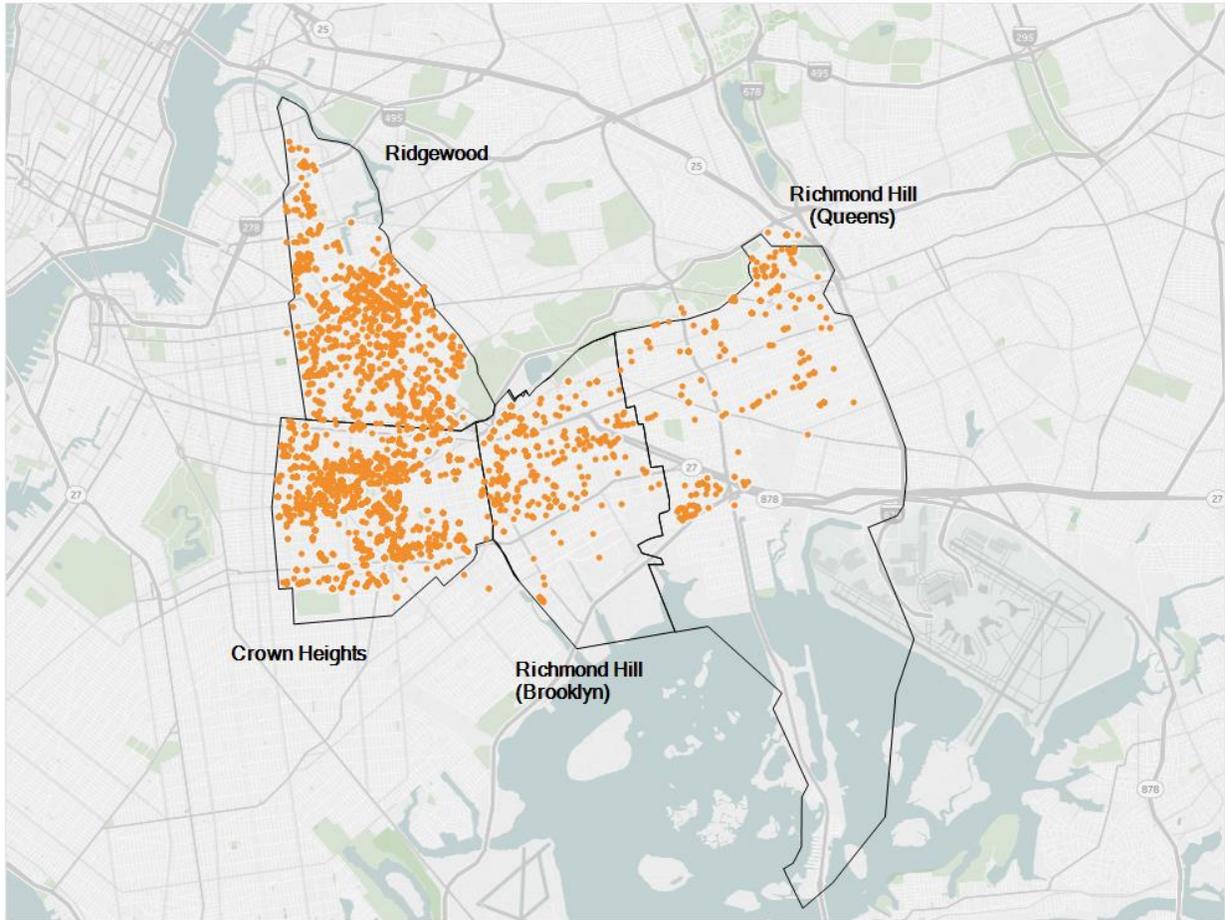


Figure 6: BQDM MFEF Project Locations

Residential Energy Efficiency Programs

In the BQDM Area, residential (1-4 family buildings) properties comprise roughly 60 percent of the customer accounts, representing approximately 30 percent of total peak demand. Given the significant portion of electric demand that residential properties cumulatively represent, the Company is targeting this customer segment to achieve load relief. Because practical solutions at a single residential customer location only provide a small amount of load relief, a large number of customers need to be engaged to obtain meaningful load relief. The Company's efforts to reach this population, in addition to providing critical load relief to the

Company, are positively impacting customer satisfaction for a significant customer segment in the BQDM Target Area.

The Company has extended the contract end date with its implementation contractor to acquire an additional 0.590 MW by December 2019, totaling a 4.497 MW peak load reduction from August 2016 to December 2019. The program is supported by marketing efforts including direct mail, email, call center outreach, social, and digital advertising. Through the end of the fourth quarter of 2018, over 27,500 units were completed, resulting in approximately 3.9 MW of peak load relief based on the Company's current best estimates for the 9 to 10 pm peak hour.

The geographical distribution of the participants in the Residential Direct Install initiative as of December 31, 2018 is graphically portrayed in Figure 7.

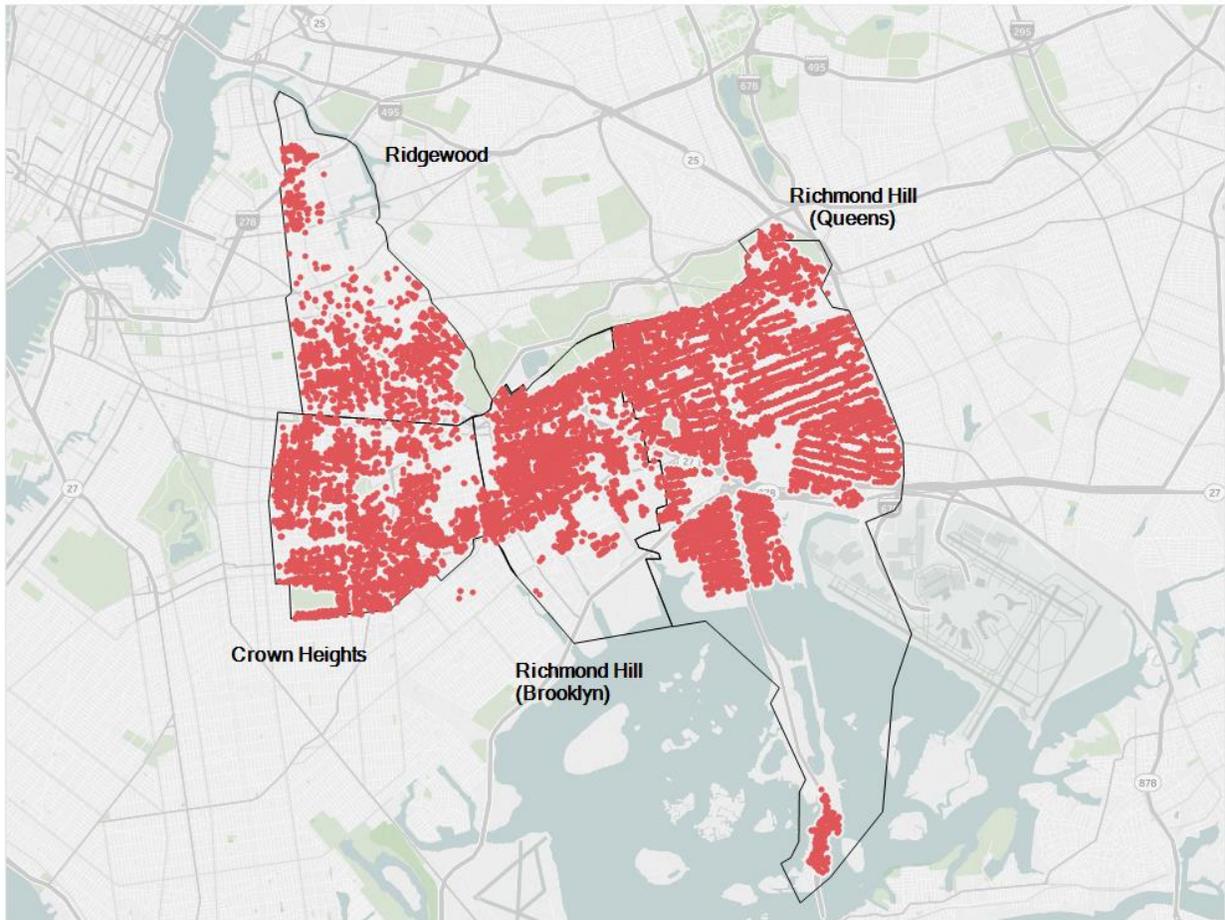


Figure 7: Residential Direct Install Project Locations

As a separate initiative, the BQDM Program continues with the Company’s Bring Your Own Thermostat (“BYOT”) program, which is part of the ETIP residential program, to develop an additional incentive mechanism to spur participation within the BQDM networks. The BQDM Program provides an incentive adder to the BYOT Program for customers with the ability to control central air conditioning in their homes using smart thermostats. By the end of the fourth quarter of 2018, 426 units were procured through the adder programs based on the Company’s which the Company estimates to represent about 192 kW of peak load reduction for the 9 to 10 pm period.

Direct Customer Activity

In addition to the programs described above, the Company has engaged in discussions with customers in the BQDM Target Area who have expressed interest in pursuing their own load relief solutions at their locations. The Company has been encouraged by the active engagement of such customers who have the ability and willingness to implement load relief projects that would both benefit the customers as well as address BQDM Program goals.

The BQDM Program leverages existing ETIP funding channels when a customer's project is deemed beneficial for the BQDM Program. Several commercial customers, who have applied for the Company's ETIP Commercial and Industrial program for various energy efficiency projects, also applied for additional funding from the BQDM Program to increase the scope of their projects to deliver higher levels of load relief in the BQDM Target Area. As of Q4 2018, the Company completed over 14 projects and delivered over 540 kW of verified load relief during the 9-10 PM period.

The Company continued to evaluate a new "phase change material" technology that actively absorbs and expends heat to help maintain comfortable temperatures while reducing peak demand by offsetting the use of air conditioning. The measure was implemented at seven commercial locations within the BQDM program territory. Based on data collected during the pre- and post-installation by the Company's third-party M&V contractor at four out of [total number of] sites, there was no evidence of demand reductions through the installation of the product at these locations.

City Agency Initiatives

New York City Housing Authority

The Company signed an agreement with the New York City Housing Authority ("NYCHA") to pursue load relief measures focused on in-unit and common area lighting.

NYCHA completed phase one of energy-efficiency lighting upgrades across 18 public housing developments for a verified peak load reduction of 1.6 MW. The Company worked with NYCHA to complete the second phase of the project, which included 5 additional developments for an expected peak load reduction of approximately 0.9 MW by end of 2018. The Company's M&V team is verifying the kW achieved up to December 2018.

As noted in previous BQDM Program quarterly reports, the Company engaged with NYCHA on a smaller initiative to provide an additional incentive for lighting upgrades through NYCHA's Weatherization Assistance Program ("WAP"), funded by both the U.S. Department of Energy and Health and Human Services and enables low-income families in smaller buildings to reduce their energy bills by taking advantage of energy efficiency opportunities. NYCHA completed energy upgrades through WAP in five low-rise buildings with a total of 150 apartments, achieving approximately 27.3 kW in peak load reduction.

Approximately 51 local hires resulted from a program that engages young adults from low income communities that are involved in national service related to the environment, to

support field operations for the NYCHA projects, such as performing apartment surveys and in-unit energy efficiency installations which support load reductions in the BQDM Area.

Other Opportunities with City Agencies

The Company continues to work with other City agencies to identify a range of viable demand reduction solutions, including interior and exterior lighting and HVAC measures at several City agency facilities.

The Company has provided incentives to the City for energy efficiency upgrades that were expected to provide load relief during the 9-10 pm peak hour and has engaged customers who can also provide load relief during hours earlier in the day to help the forecasted overload period, *i.e.*, projects at facilities that close earlier in the day but can provide load relief during the afternoon.

Several lighting and AC swap upgrades have been completed and verified for load reductions. As of Q4, 2018, the completed projects achieved an estimate 86 kW of load relief during the peak hour. The Company continues to engage with City agencies to implement incentive-based energy efficiency projects that can contribute additional load relief where applicable.

Dynamic Resource Auction

Descending Clock Auction

With the goal to meet the reliability need during the peak hours in the targeted area in 2017 and 2018, the Company developed and hosted a descending clock auction on July 27-28, 2016,

to procure resources that were dynamic, *i.e.*, callable or dispatchable, with specific performance attributes as described below.

There were four DR products in the BQDM DR offering:

- 8 PM — 12 AM for the 2017 capability period;
- 4 PM — 8 PM for the 2017 capability period;
- 8 PM — 12 AM for the 2018 capability period; and
- 4 PM — 8 PM for the 2018 capability period.

The BQDM DR Auction procured a total of 22.69 MW of load reduction for 2018 for the two products offered. Of that, 19.08 MW was declared deficient from six of the ten awarded bidders, with the majority for the 8PM – 12AM product. More than half of the awardees proposed technologies such as battery energy storage as their primary means of providing DR; however, with the lack of clarity in the battery permitting process and lengthy time involved, these awardees were not able to have their battery energy storage solution installed for the 2018 capability period. Others also declared partial deficiency due to difficulty with customer acquisition.

For the 2018 BQDM DR capability period, 2.63 MW of load reductions were enrolled for the 4 PM to 8 PM call window and 2.52 MW were enrolled for the 8 PM to 12 AM window. The voluntary DR program for the BQDM territory also received 2.09 MW of pledged load reductions.

During the 2018 DR capability period, ten (10) BQDM events were called across the following dates:

- June 18
- July 1
- July 2
- August 6
- August 7
- August 8
- August 28
- August 29
- August 30
- September 6

Figure 9 below displays aggregate load reductions for each BQDM event day for the two DR call windows as well as the voluntary program.

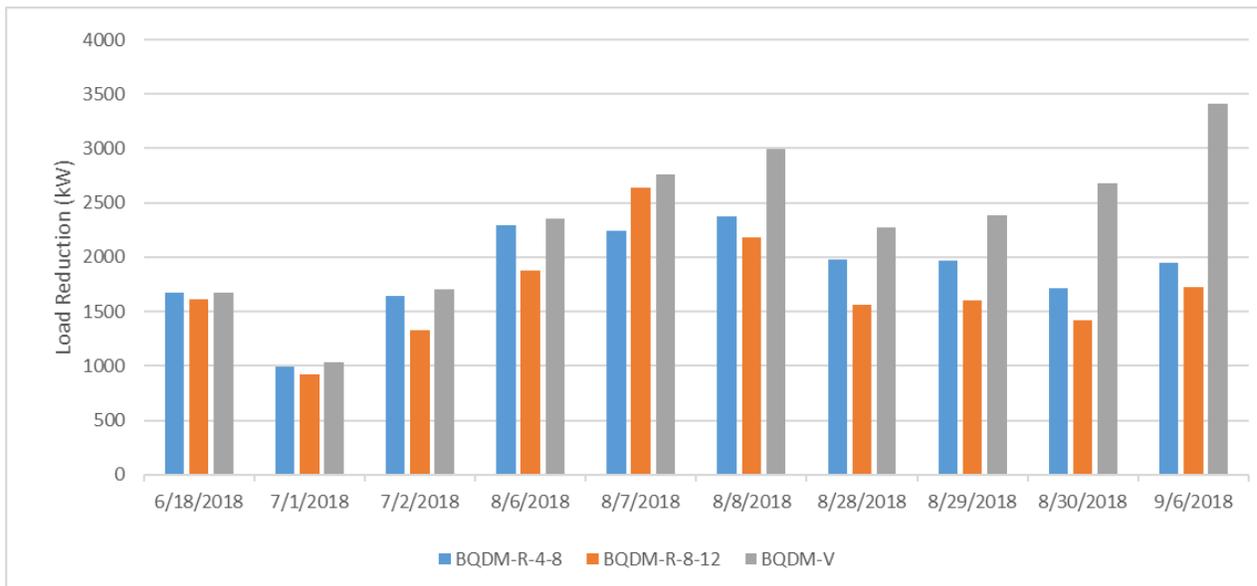


Figure 9: DR Load Reduction on BQDM Event Days

Across the ten (10) BQDM Event Days in 2018, the average load reduction for the 4PM to 8 PM and 8 PM to 12 PM call windows was 1.89 MW and 1.68 MW, respectively. The voluntary program contributed, on average, 2.32 M of load reductions.

The results of the auction provided sufficient capacity to meet the Company's needs, however, , execution risks persist, and some winning bidders were unable to provide the load reduction contracted for 2017 and 2018. Additional information on the efficacy of the BQDM DR Program and Auction Mechanism can be found in the report filed in December 2018.¹⁵

Distributed Generation

CHP Solutions

The Company has worked closely with the New York State Energy Research and Development Authority's ("NYSERDA") combined heat and power ("CHP") program administrators as well as the natural gas provider in the area, National Grid, and its CHP team, to investigate the potential for CHP development in the BQDM area. The Company, working in collaboration with NYSERDA, has provided additional funds up to the base incentive level that NYSERDA offered under its CHP Acceleration Program, covered by Program Opportunity Notice ("PON") 2568,¹⁶ for eligible installations in the BQDM Area.

¹⁵ <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b7D6A5F8B-8E28-4DD5-8C2BF63F47149DEE%7d>

¹⁶ Information about NYSERDA's CHP Acceleration Program can be found at <http://www.nyserda.ny.gov/PON2568>; URL last accessed 10/28/2016

To date, the Company has contracted over 3 MW of load relief capacity from CHP systems with 1.59 MW in service as of the end of Q4, 2018. During the summer of 2018, the average performance of CHP systems during the BQDM overload period (*i.e.*, noon to midnight) was approximately 60% of the total load relief contracted. An additional 1.2 MW is expected to be operational by May 2019.

On July 5, 2018, the Company announced an extension of its existing CHP incentive program. Customers installing new CHP systems in the BQDM territory before the end of the summer 2020 will be eligible to receive a matching incentive to NYSERDA PON 2568, subject to certain requirements. The Company continued discussions with NYSERDA in Q4 2018 to improve awareness of the CHP matching incentive programs and is conducting additional targeted outreach to BQDM customers in Q1 2019.

Con Edison continues its engagement with National Grid to explore deployment of micro-CHP systems (less than 10 kW units) for residential and multi-family customers in the BQDM Area.

The geographical distribution of CHP projects installed has no updates from last quarter and remains graphically portrayed in Figure 10. The size of the dot correlates to its capacity installed in kW.

Fuel Cells

The Company investigated innovative solutions to provide reliable load relief during the forecasted overload period, which occurs for more than 12 hours. In particular, the Company

studied the use of efficient fuel cells or other similar resources that generate electricity through non-combustion chemical mechanisms and determined that they are able to provide long periods of load relief efficiently and reliably, with minimal operational overhead. These resources can be built with somewhat minimal lead time, while using a relatively small footprint in the land-constrained targeted area. The Company investigated business arrangements that would incentivize adoption of so technologies such that third-party capital could be leveraged so that it is both beneficial to the customer and cost effective to the Company. The Company identified and engaged customers who have the potential to realize savings and gain additional benefits by implementing these solutions.

As reported in the BQDM Q3 report, the Company achieved a total of 6.1 MW of installed and operational fuel cells which represents the total load relief contracted for fuel cells. There are currently no additional fuel cell installations in progress; however the Company is working with NYSERDA to provide a matching incentive for new projects that will provide load relief in the BQDM targeted area through 2019.

Solar Photovoltaic

The BQDM Program helped customers with the interconnection costs for various distributed energy resources (“DER”) in the target area. In one instance, the BQDM Program covered the cost of the Supervisory Control Data Acquisition (“SCADA”) system upgrade required to interconnect the applicant’s solar photovoltaic project to the electric grid. The project has a rated nameplate capacity of approximately 750 kW and is fully operational. Actual hourly load relief is monitored through the Company’s M&V efforts. A second project that is benefiting

from a similar arrangement has a rated nameplate capacity of approximately 800 kW and was operational in the fourth quarter of 2018. There are currently no additional solar projects expected as part of the BQDM Program.

The geographical distribution of the Innovative Distributed Generation projects installed as of December 31, 2018 is graphically portrayed in Figure 10. The size of the dot correlates to its capacity installed in kW.

BQDM Distributed Generation Projects



Figure 10: Distributed Generation Project Locations

Customer-Side Solutions Program Management Activities

Market Solicitations

On July 15, 2014, the Company issued a broad RFI which initially drew 78 responses, followed by an additional 11 responses by the end of September 2016. An RFI, by its nature, allows for broader responses than an RFP but requires a greater level of scrutiny and validation of the information provided. The proposals presented via the RFI have provided the Company with valuable insight into potential solutions, including indicative pricing, operational needs and reliability, potential environmental impacts and, in a few cases, potential customer partners. The Company remains open to other solutions, either via solution providers or customers.

Distributed Energy Resource Evaluation Tool

The Company built a tool, using both internal and external expertise, to evaluate on a comparable basis a diverse range of DER while accounting for duration of availability (*e.g.*, four-hour battery, eight-plus-hour energy efficiency, two-hour demand response), risk, maturity, flexibility, and ability to otherwise meet the needs in the BQDM Target Area. The Company also developed a portfolio approach to identify a mix of resources that can meet the reliability need over the 12 hours on a design peak day. Using the evaluation tool, the Company evaluated DER solutions using a combination of multiple criteria. Throughout the BQDM Program timeline, the Company is supplementing results from the evaluation with additional qualitative assessments of the solutions' ability to meet the BQDM Program timing and reliability needs while fostering engagement with the community.

Community Engagement and Outreach

Using a combination of traditional marketing and grassroots outreach, Con Edison continued to raise awareness of energy efficiency initiatives throughout its service territory. Marketed as the “Neighborhood Program” to customers living in the BQDM Target Area, Con Edison has increased program participation with community investment and the cultivation of meaningful relationships with stakeholders across the socioeconomic spectrum.

In the fourth quarter of 2018, Con Edison attended a range of civic meetings and industry events throughout Brooklyn and Queens to provide program updates on the C&I, CDI, MFEE, and Residential adder programs.

Outreach activities in Brooklyn included, but were not limited to: sponsorships of the Brooklyn Chamber of Commerce annual meeting and Real Estate Tech Week at NYU Tandon School of Engineering; presentations to the Brooklyn Borough Hall District Service Cabinet and Business Improvement District (BID) annual meetings; the NYPD 83rd Pct. “Build the Block” neighborhood meeting; the Bed-Stuy Gateway BID annual meeting; St. Nicks Alliance fall fundraiser; Building Energy Exchange’s “Green Seeds” meet-up; the Real Estate Board of New York’s (“REBNY”) Brooklyn Committee Meeting; NY Building Congress Innovation Committee luncheon; networking nights hosted by Evergreen North Brooklyn Business Exchange; and NHS Brooklyn’s Housing Resource Fair in East Flatbush.

In Queens, the Company worked with Councilman Eric Ulrich to present the Neighborhood program’s enhanced energy efficiency offerings at his 2018 Fall Festival in Woodhaven.

Company personnel also conducted ongoing outreach at the South Ozone Park Civic Association West monthly meeting and during Community Board 10's district cabinet meeting. Con Edison staff also discussed the company's efficiency programs during meetings with the offices of Councilwoman Adrienne Adams and Assemblyman Clyde Vanel.

In furtherance of the Company's utility-side solutions, Con Edison staff conducted a field visit of the battery storage location to prepare for outreach to the community and local media. Company employees also communicated with Department of Education officials about potential engagement opportunities with middle school 137 students about battery storage technology.

The Company plans to continue these meetings and activities on a regular basis to keep the community abreast of its plans and actions, and to maintain effective outreach strategies.

Customer Engagement

In the fourth quarter of 2018, the Company aimed to reach the remaining customers within the BQDM area by using a combination of online and offline marketing tactics. As in the 3rd quarter, the Company continued to increase email communications and align delivery of emails with direct marketing efforts. The coordinated effort to send emails promoting free light-emitting diodes (LEDs) on or around the time when the canvassers were visiting particular neighborhoods led to better engagement and reduced customer skepticism throughout 2018.

Between October 22 and October 26, 2018 the Company launched a five postcard series to the BQDM customer base to market the programs to promote the programs. Call volume increased significantly with this effort and resulted in the highest number of appointment calls for the year. Additionally, canvassers noted that customers were more likely to react favorably when the word "FREE" was prominently displayed in the layout. When "\$175" (reference to the value of the bulbs) was prominent, customers were less likely to react favorably due a misperception that it was a cost to the customer for the program.

Four emails were delivered to customers on October 5 and October 29, 2018. Two emails were sent on each day for A/B testing. The October 5 email used the subject line "Fall Into Savings" and "Fall Into Savings with FREE LEDs!" Over 2,000 customers opened these two emails and over 260 took an action. Average open rate of the two is 14.8%, below the benchmark. The email itself performed well. The Click-Through Rate (CTR) was almost 2%, consistent with the benchmark and the Click-To-Open-Rate (CTOR) was 16% well above the 6% benchmark. This suggests that the offer was of interest to those who opened the mail. The October 29 email performed similarly with lower than average open rates but higher than average CTR and CTOR. To complement the email effort, the Company has continued its organic social advertising campaign featuring customer testimonials.

The Referral Incentive was launched on the Company website on November 15, 2018. It was also promoted in updated program collateral. It was paired with a new step-by-step message that included the \$15 referral incentive. In addition, throughout Q4 2018, the Company

continued its community outreach efforts to raise program awareness in the BQDM Target Area. Street Table Outreach and a Housing Fair in October and November of 2018 resulted in 96 enrollees from 295 attendees.

In Q1 2019, the Company intends to launch an optimized website to improve the customer journey and integrate a more effective appointment scheduling tool to enhance and improve the customer journey from point of interest to service completion.

Measurement & Verification Efforts

The Company constantly looks to improve its processes to be well-prepared to perform M&V on additional projects and technology-specific programs even as increasing amounts of DERs, such as distributed generation and energy storage, are implemented under the BQDM Program and procured for future non-wires solutions (“NWS”).

The Company’s metering effort to gather comprehensive data on consumers' electricity usage patterns through 24-hour load shapes of end-use equipment has been helpful in determining potential program savings.

The Company continues to work closely with public entity stakeholders, such as NYCHA and the Department of Citywide Administrative Services (“DCAS”), to accommodate their installation schedules. The Company has scheduled post-inspections for all completed projects and is awaiting completion of installation and delivery of as-built for the remaining ones.

Demand reduction from the Residential Energy Efficiency Program is being verified by the Company as the implementation contractor continues to retrofit inefficient lighting with LEDs for BQDM residential customers.

The Company will incorporate lessons learned into its processes, including for M&V, for future targeted demand reduction efforts.

Demand Management Tracking System

During the fourth quarter of 2018, the Company continued to develop and expand the Demand Management Tracking System (“DMTS”) with capabilities to manage customer relationships, project management activities, and to serve as the system of record for the Company’s energy efficiency and demand management programs. This system is used to process, monitor, and store customer leads and project information for the purposes of program reporting.

DMTS is intended to become the primary source of information for internal and external reporting, including regulatory reporting, once all the programs have been fully implemented within DMTS. DMTS includes project and measure details associated with CDI and MFEE adder installations for the BQDM Program. DMTS also tracks energy savings calculations and load relief impacts that are used to validate payments to contractors. Contractors for both the MFEE and CDI programs upload project data to the DMTS for tracking, validation, and reporting.

The DMTS is being expanded to provide additional functionality and tracking for various other efforts under the BQDM Program such as the Residential Direct Install program, C&I adder installations, and efforts associated with DCAS and NYCHA.

BQDM Extension Auction

Extension Auction

Based on the BQDM Program's success, as well as reductions in peak load forecasts and traditional infrastructure improvements, the Commission approved the Company's request to defer additional traditional investments and deliver additional benefits to customers through an extension of the BQDM Program beyond 2018.¹⁷

The Company pursued a BQDM Extension Auction to procure additional Peak Demand Reduction to be operational by May 1, 2019. The BQDM Auction resulted in the procurement of 4 MW of additional load relief from battery storage technologies. The project has submitted interconnections and has complied with all requirements of the program. The project is on track to be operational before the summer 2019.

Additional Load Relief Opportunities

The Company continues to seek solutions that can provide additional peak load relief by summer 2020, through direct customer engagement and extension of its existing efforts (*e.g.*, CHP).

¹⁷ Case 14-E-0302, *Petition for Extension of Time to Implement Brooklyn/Queens Demand Management Program*, Order Extending Brooklyn/Queens Demand Management Program ("Extension Order") (issued July 13, 2017).

3.2 Non-traditional Utility-Side Solutions

The focus of the non-traditional utility-side solutions (“USS”) has been to leverage innovative technologies and strategies. Some of the design and implementation activities to implement these non-traditional USS have been developed within the Company. In addition, the Company has solicited services from external vendors on an as-needed basis. Deployment of the non-traditional USS to meet the 11 MW non-traditional utility-side goal has focused on a Distributed Energy Storage System (“DESS”) (a battery) and Conservation Voltage Optimization (“CVO”). The Company is in progress with implementation of the DESS and has completed the CVO solution. The two utility-side solutions will result in approximately 18.5 MW of combined peak load reductions. The Company has also evaluated other technologies in the event they are needed.

Distributed Energy Storage System

The DESS was designed to provide Con Edison with 12 MWh of stored energy and can be configured to deliver this power at up to 2 MW for 6 hours. Con Edison signed a contract with the vendor on August 18, 2015. Construction began in the second half of January 2018 and substantial completion is expected by January 2019. All civil work has been completed and the Company continues to work on punch list items and closing permits with various city agencies (*e.g.*, DOB, DOT, DEP, and FDNY). The unit was placed in service on November 30th, 2018. Final capacity testing is scheduled for January and it is estimated that the final MWh rating will have degraded to approximately 11MWh/11.5 MWh from 12 MWh due to the battery being stored

at Astoria for over two years. Operational and business plans for energy storage system are being finalized for the anticipated load relief need for the upcoming 2019 summer period.

Voltage Optimization

The purpose of the CVO project is to optimize the voltage on the 27kV primary system, and the 4kV overhead system by implementing enhanced, efficient voltage control. Based on M&V calculations, CVO reduced peak load by a total of 7.9 MW for 2016. Additional load flow studies have been performed to identify areas of relative low voltage compared to surrounding areas. For 2017, voltage reduction was increased from 1.5 percent to the 2.5-3.0 percent range. A functionality test was successfully performed in early May 2017 to verify that all settings and procedures are established and working. Initial load reduction based on the test was 16.5 MW, surpassing the utility-side solution load reduction goal of an 11 MW. The CVO project is expected to continue provided load reduction in the current and future years.

4.0 Synergies

In addition to load relief projects being pursued under the BQDM Program, the Company is assessing other load relief solutions being developed in the BQDM Target Area. In particular, Company personnel responsible for the BQDM Program have worked closely with personnel managing the Company's Demand Management Program ("DMP") to identify synergies and benefit from mutual load relief efforts.

In addition to various demand management and energy efficiency programs, the Company will continue to seek opportunities to create synergies with wider Company efforts such as the Company's REV Demonstration projects and other rate case programs.