

BROOKLYN QUEENS DEMAND MANAGEMENT PROGRAM – EMPLOYING INNOVATIVE NON-WIRE ALTERNATIVES

A successful transition to a 21st Century Electricity System (21CES) requires careful consideration of a range of issues that will ultimately redefine the regulatory framework and utility business model. This case study is the third in a series by Advanced Energy Economy Institute, America’s Power Plan, and Rocky Mountain Institute that highlights 21CES business model reforms being implemented in the United States and elsewhere. This series is published concurrently with a guiding document on Navigating Utility Business Model Reform to provide a menu of options and practical guidance for pursuing reform at the state level. This report is available at: <http://www.rmi.org/insight/navigating-utility-business-model-reform>

What Problem is the BQDM Program Attempting to Solve?

In a July 2014 petition to the New York Public Service Commission (PSC), Consolidated Edison (Con Edison) highlighted that rising electricity demand in Brooklyn and Queens would lead to capacity constraints on a portion of its grid as early as 2018. Specifically, Con Edison projected 69 MW of demand growth above existing distribution capacities that could overload existing infrastructure and lead to reliability concerns. The proposed solution, at an estimated cost of \$1B, relied on traditional approaches including a new distribution substation (by 2017), expanding an existing 345 kV switching station, and constructing a sub-transmission feeder to connect the two stations. The Brooklyn Queens Demand Management (BQDM) program emerged as an alternative to this traditional infrastructure solution.

How is BQDM Attempting to Solve This Problem?

Con Edison proposed to lower the projected 69 MW of additional peak demand (from 12:00 PM – 12:00 AM) through non-wires alternatives (NWAs), including: **1)** 41 MW of non-traditional customer-side electricity demand reduction solutions; **2)** 11 MW of non-traditional utility-side electricity demand reduction solutions; and **3)** 17 MW of traditional capacitor and load transfer solutions. (More details on 1 and 2 in the table below). The solutions, which were expected to defer the need for the traditional infrastructure investment for at least seven years, were approved by the PSC with a \$200M budget (plus \$305M for the traditional solutions) in December 2014. In July 2017, the BQDM program was extended beyond its initial three-year scope, at no extra cost.

Non-Traditional Solutions Approved for BQDM

Customer-side savings (\$54M invested)		Utility-side savings (\$15.8M invested)	
Commercial Direct Install Program	10.7 MW*	Voltage Optimization	16.5 MW
Multi-Family Energy Efficiency Program	4.3 MW*	Distributed Energy Storage System	0 MW
Dynamic Resource Auction	3.29 MW	Total	16.5 MW
Residential Energy Efficiency Program	2.4 MW	The majority of demand reductions come from four programs: 1) voltage optimization; 2) the commercial direct install program (energy efficiency); 3) multi-family energy efficiency program; and the dynamic resource auction (demand response).	
Direct Customer Activity	0.03 MW		
Partnership with NYC Housing Authority	1.6 MW		
Combined Heat & Power	0.8 MW		
Fuel Cell	0.8 MW		
Total	23.92 MW	*Note: These are contracted rather than verified savings. Total verified savings are 22.1 MW (for customer-side) through 2017 as there is a slight gap between contracted and hourly operational savings	

What was the Process to Implement BQDM?

The BQDM program resulted from a settlement in Con Edison's 2013 rate case, and was proposed before New York's well-known Reforming the Energy Vision (REV) proceeding started. The PSC Order stated: "This is the first time that the Commission is requiring a utility to actively and vigorously work to address growth in system demand in a manner other than through traditional utility investment." Con Edison utilized a comprehensive, multi-stakeholder engagement process in lieu of a traditional request for proposals (RFPs) to solicit non-traditional solutions. It issued a request for information (RFI) to gather more information, using a selection process to balance high-confidence, low-cost solutions with newer, higher-cost developing solutions. Con Edison received 89 responses, primarily consisting of proposals for energy efficiency, energy management/audit software, energy storage, customer engagement, demand response, and combinations of technologies. In the end, 10 bids were awarded.(more on the bidding process below).

Key Program Attributes

Performance incentives. The PSC adopted incentives to encourage Con Edison to invest in non-traditional solutions (normally treated as operating expense that is passed through to customers without earning a return) rather than traditional capital investments (normally earning a rate of return). This approach encouraged the utility to contract for third-party services that drive down project costs, resulting in a win-win-win scenario for the utility, third party companies, and customers. Specifically:

- 1) Con Edison earns an authorized rate of return on BQDM program costs.
- 2) Con Edison has the potential to receive up to 100 basis points in performance incentives above their authorized rate of return on BQDM program investments. 45 basis points are tied to achieving the proposed 41 MW demand reduction with alternative measures. 25 basis points are tied to increasing diversity of DER in the marketplace. 30 basis points are tied to achieving a lower \$/MW value than traditional investment solutions.
- 3) Con Edison proposed an additional shared savings mechanism, in which it would receive 50% of the annual net savings, as calculated as the difference between the annual carrying cost of the original \$1B traditional investment package and the total annual collections for the BQDM program. Con Edison ultimately revised the proposal for future NWA projects (including the BQDM extension discussed below) allowing the utility to earn 30% of the annual net benefits.¹

Accelerated Depreciation. Con Edison is able to recover investments over a shorter time horizon (10 years) than they would with traditional capital investments.

REV test bed. Because of the program's focus on distributed energy resource (DER) solutions as NWAs to traditional utility solutions, BQDM provides an opportunity for stakeholders to test REV concepts – fundamentally redefining the role of the utility as an enabling platform to facilitate the widespread deployment of DERs. Con Edison learns more about the potential for DER solutions and participating customers and third parties get more experience managing energy usage.

Interim targets. BQDM set interim goals for each year, which have all been achieved, and is employing lifecycle analysis to track progress.²

By Jan 1, 2015, contract a total of 9 MW for June 2016.

By Jan 1, 2016, contract a total of 32 MW for June 2017.

By Jan 1, 2017, contract a total of 41 MW for June 2018.

Transparency in selection of solutions. Con Edison retains an independent reviewer to oversee RFI and RFP project selection activities.

Multiple solution providers. An RFI is used to evaluate multiple approaches and technologies to determine the best solutions, balancing high-confidence, low-cost solutions with newer, higher-cost solutions, including those still under development.

Customer Outreach. Detailed outreach plans are updated annually to engage with community leaders and non-governmental organizations.

Other benefits. BQDM expects to generate wholesale energy market price reductions, increased resiliency, reduced carbon emissions, and other non-financial benefits.

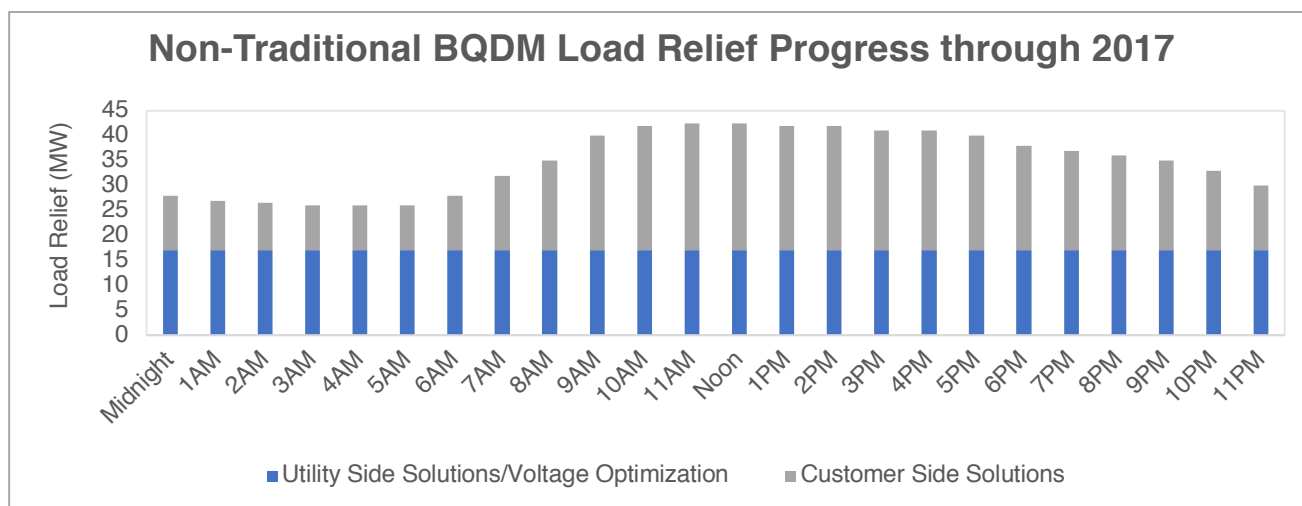
Program Performance to Date

Early results have demonstrated the success of the program so far:

Benefit-Cost Analysis. In its initial benefit-cost analysis in July 2014, Con Edison calculated a net present value (NPV) of \$9.2M. By December 2014, it had updated that figure to \$40M as a result of expanded analysis of the benefits of customer-side resources, updated cost estimates, and further deferral of traditional investments from 2024 to 2026. As of August 2017, Con Edison further revised the NPV of the project to \$94.9M, including \$65.5M of benefits from delaying load transfers from 2017 to 2026, \$549M of benefits from delayed substation/transmission investments, and \$133.3M in benefits from avoided capacity, energy, distribution, environmental and line loss, for a total of \$747.8M of benefits against \$652.9M in costs. The majority of costs come from incremental traditional costs in load transfers and substation/transmission investments that were deferred until 2026.³

Costs and Recovery. Con Edison has spent \$69.86M (\$54.02M customer side, \$15.83M utility side) on the BQDM program through 2017, meaning it has a remaining budget of \$130.15M. Through 2016, those costs were recovered through a Monthly Adjustment Clause (MAC). As of January 1, 2017, those costs are now being recovered through base rates. A total of \$19.15M has been recovered by Con Edison from program inception through 2017.

Projects Summary. Con Edison has achieved 38.6 MW of peak hour relief from non-traditional utility-side and customer-side solutions. The chart⁴ below illustrates the anticipated hourly load relief provided by solutions that were operational by the end of 2017 during a peak day.



Signs of Success

PSC extended the BQDM Program beyond the initial three-year scope with no termination date, without additional program funding or modification to shareholder incentive mechanisms. The July 2017 Order “recognizes the success of the BQDM program.” Some other early examples of success include:

- Con Edison has kept pace with interim timelines, and has been consistently under budget. It was on track to meet its 42 MW customer-side solutions and 11 MW utility-side solutions by June 1, 2018.
- Peak demand forecasts have declined, due to lower economic growth and slower than anticipated new construction. This has demonstrated the opportunity for non-traditional solutions to not only defer investments but also to potentially allow solutions to scale and save more money than initially anticipated.
- Con Edison now expects to defer the Glendale substation project, which was a component of the traditional solutions of the initial BQDM Program proposal, to 2026 or beyond. The Glendale project originally consisted of 80 MW of load transfer and the installation of a fifth transformer to meet load. This further demonstrates the ability of non-traditional solutions to provide additional flexibility, which can avoid over-investment.
- PSC Chair John Rhodes called BQDM “one of the best examples of the energy reforms underway in New York.”

Lessons Learned and Potential Areas for Improvement

Early results have been positive, although there have been some challenges in the first few years which point to potential areas of improvement.

- ⦿ A daily peak load of 12 hours (noon to midnight), which is longer than has been used in other programs, presents challenges in using non-traditional solutions such as aggregated DERs to manage peak load over the entire time period.
- ⦿ In the capacity-constrained area, 85% of accounts are residential, and most commercial accounts are small. This customer composition requires Con Edison to engage with landlords, tenants, and other entities, representing an area that is less scalable from a cost perspective than would be the case if the service territory had a different make-up.
- ⦿ The first demand response auction found that a two-year contract for demand response resources was challenging for third-party providers to finance (they usually have 10-year contracts), which led to high bid prices. As a result, the next auction will be an incentive-based auction instead of capacity, requiring bids for specific dollar amounts for specific projects with existing customer accounts, as well as security deposits. This process improvement will help Con Edison mitigate permitting and performance risks while providing better signals to applicants.

Sources

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[NY PSC, Case 14-E-0302: Petition of Consolidated Edison Company of New York, Inc. For Approval of Brooklyn/Queens Demand Management Program, July 14, 2014](#)

[NY PSC, Case 14-E-0302: Order Establishing Brooklyn/Queens Demand Management Program, Issued and Effective: December 12, 2014](#)

[NY PSC, Case 14-E-0302: Order Extending Brooklyn/Queens Demand Management Program, Issued and Effective: July 13, 2017](#)

[NY PSC, Case 14-E-0302: Brooklyn/Queens Demand Management Program, Implementation and Outreach Plan](#)

[Interview with Third Party Provider auction winner](#)

[Interview with Con Edison Associate Counsel](#)

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End Notes

¹ <https://www.rtoinsider.com/new-york-psc-consolidated-edison-37259/>

² NY PSC, Case 14-E-0302: BQDM Quarterly Expenditures & Program Report: Q4-2015, Q4-2016, Q4-2017

³ NY PSC, Case 14-E-0302: BQDM Program Cost Benefit Model: August 29, 2018

⁴ NY PSC, Case 14-E-0302: BQDM Quarterly Expenditures & Program Report: Q4-2017