Review of Con Edison NWS Program

OEB FEI Working Group July 29th, 2021

YY/MM/DD Presentation date Arial Regular 12pt

Long-Term Vision for the Con-Edison DSP

- State and Commission policy proceedings are progressing a comprehensive energy plan for NY (system efficiency, reliability and resilience, market animation, utility business models, customer empowerment, GHG emissions)

- Policy efforts have served as a 'critical starting point for the DSPs to expand distribution-level investments to enable more active participation of customers and DER in the New York energy marketplace'

- At distribution level, DSP vision continues to focus on facilitating the growth of distributed clean resources by providing for – DER integration, information sharing, market services

- DSPs will deliver value for electricity customers and market participants through expanded customer choice, greater use of DER as a grid resource and enhanced access to value streams that compensate DER for their realized distribution and wholesale value*

- NWS – a core business function within the capital planning process and an important mechanism for bringing DERs on the system

- https://www.coned.com/-/media/files/coned/documents/our-energy-future/our-energy-projects/distributed-system-implementation-plan.pdf

BQDM Overview

- Con ED filed a Petition with the NYPSC in 2014 to defer the need for $1.2 B in traditional infrastructure investments;
  - Petition was based upon a Con Ed forecast that by 2018 the sub-transmission feeders serving local substations would be overloaded for approximately 40 to 48 hours during the summer months unless the anticipated load growth in the BQDM area was reduced.

- The Commission authorized the BQDM Program late in 2014 Order –
  - Authorization to incur up to $200 M in expenditures to implement a portfolio of customer-side and non-traditional utility-side solutions to defer major infrastructure upgrades.

- BQDM Highlights:
  - Program was originally intended to run from 2017-2019 – but was indefinitely extended due to success and ability to defer/avoid additional traditional infrastructure investments
  - 59 MW of proposed peak load relief in targeted area:
    - 41 MW of customer-sited solutions from energy efficiency, demand response, storage, fuel cells and CHP;
    - 11 MW of utility-side demand reduction solutions;
    - 17 MW of traditional capacitor and load transfer solutions
    - (Actual 2018 Results: 33.5 MW customer sided solutions; 18 MW from utility sided solutions)

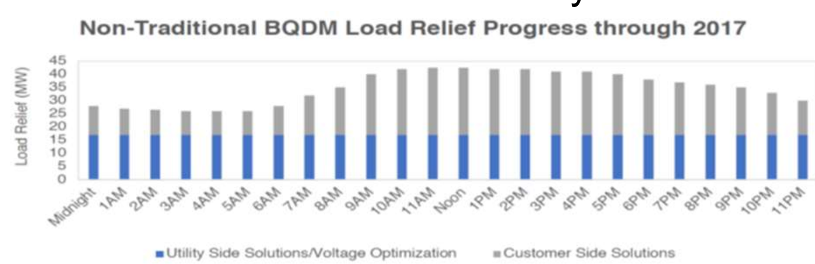
Program Performance (2017)

AEE https://info.aee.net/navigating-utility-business-model-reform-case-studies

- Benefit-Cost Analysis
  - 2017 – NPV = $94.9 M
    - $65.5 of benefits from delaying load transfers from 2017 to 2026
    - $549 M of benefits from delayed substation/transmission investments
    - $133.3 M in benefits from avoided capacity, energy, distribution, environmental and line loss
    - Total - $747.8 M of benefits against $652.9 in costs

- Costs and Recovery
  - 2014-2017 - $69.86 M spent (remaining budget of $130.15 M)
  - As of January 1, 2017 costs are recovered through base rates

- Project Summary
  - Achieved 38.6 MW of peak hour relief from non-traditional utility side and customer solutions



Case Study: Marcus Garvey Village

Marcus Garvey Village installs NYC's first micro-grid providing peak load reduction, stand-alone backup power and solar PV self-consumption

Number of Sites: 625 apartment village

Storage Size: 375kW/1560kWh

Project Details:
The integration of solar PV, energy storage, and a fuel cell w Enel X's DER Optimization Software has lowered the Marcus Garvey's energy costs, delivered essential load relief for Con Ed, and helped reduce GHG emissions

- **Key Results & Benefits**
  - The project is **economic through NWS payments** from Con Edison participation in Demand Response programs
  - Optimization of demand charge management through the combined solar, fuel cell, building load, and battery storage operations
  - Access to backup power for critical facilities in the event of a power outage

The Marcus Garvey Village microgrid is a prime example of how a major city can build an intelligently controlled distributed digital power grid, provide local resilience and other grid-supporting capabilities, and transform the energy supply chain.

Lessons Learned

Lesson #1 – Right Regulatory Environment

- Create the right regulatory environment for utilities to invest in third-party NWS and be agnostic to CapEx/OpEx issues; utility incentives should align with positive customer outcomes
  - In BQDM, the NY PSC authorized Con Ed to earn a rate of return on their BQDM investment despite Con Ed not putting up their own capital, and authorized a 100 basis points adder depending on performance (Docket 14-E-0302)
- Utility ownership is not required to have reliable NWS; contractual agreements between utilities and third parties define when NWS solutions will need to be available for dispatch and contain meaningful penalties for non-performance

Lesson #2 – Option Value from NWS

- In addition to the more recognized benefits, NWS can provide tremendous option value for utilities and all consumers

- Poles and wires investments are often made based on <u>expected</u> conditions; if those conditions do not materialize, the cost of the investment still needs to be recovered over a 30-year life; NWS provides option value in case expected conditions do not materialize

- For BQDM – the NWS bought additional time to see how local reliability conditions would materialize; during that time, peak load forecasts were meaningfully reduced, the BQDM program was successful, additional customer sited solutions materialized, and there was increased load serving capacity of the sub-transmission system, resulting in additional deferral opportunities and customer savings

  - **Example:** Glendale substation (part of traditional solutions of initial BQDM proposal) deferred to 2026 or beyond
  - Project: 80 MW of load transfer and installation of 5th transformer to meet load

Lesson #3: Dual Participation

- Allow NWS to also participate in wholesale markets. This has several advantages:
  - Revenues from wholesale participation can reduce the cost of the NWS
  - In addition to providing distribution-level savings for all customers, the project can provide wholesale savings
  - From a reliability perspective, the wholesale grid operator should have operational visibility into the NWS
- When NWS projects are dispatched by utilities, project owners can reflect that in their wholesale market offers

Other Lessons Learned

- Benefit Cost Analysis:
  - When evaluating NWS and performing BCA analysis, think comprehensively and include all potential benefit streams.

Avoided Cost Model

	Net Present Value of Avoided Cost Streams
Potential Savings / Avoidance (Costs are already Escalated)	
Avoided Capacity (NYC) - Bulk System Benefits	$63.62
Avoided Energy (NYC)	$100.22
Net Avoided CO2	$34.18
Avoided Distribution Costs	$47.60
Avoided Line Loss	$11.77
Total ($M)	$257.39

*Con Edison's 2026 Avoided Cost Model
September 27th, 2019
Docket 14-#-0302

- Project Screening*:
  - Develop data requirements, project review and screening processes and suitability/screening at the beginning; develop screening criteria considering policy needs and integrated approaches; integrate the NWA process with utilities' T&D planning in advance

- NWA Solution Development*:
  - Look everywhere – evaluate resources included in load forecasts, other projects in study area, existing infrastructure capacity and existing or planned DERs and DSM; analyze potential NWAs through NWA resource modeling and application to grid conditions to understand what can meet the need

- Market Engagement*:
  - Effectively engage third parties in providing NWA resources; use RFIs or other approaches to gather feedback on the viability of NWA solutions early in the process and develop targeted RFPs

***Recommended Reading:** DNV GL Non-Wires Alternatives: Overview of Process and Lessons Learned (CT PURA Docket 17-12-03RE07)*