



Marcus Garvey Village Microgrid

Demand Energy's solar + storage + fuel cell system is the first microgrid in New York City to provide peak load reduction, standalone backup power, and ensure solar PV self-consumption. It's a model to emulate. Everywhere.

New York City is one of the most energy-intensive urban environments in the world. As loads grow over time, different networks become constrained. The Brooklyn-Queens area is now the target of a comprehensive energy efficiency and load reduction program, in which Demand Energy is playing a major role. The owners of the 625-apartment Marcus Garvey Village are deploying a first-of-its-kind microgrid integrating solar PV, storage and a fuel cell with Demand's DEN.OS intelligent software to manage these distributed energy resources. A key aspect of the project is the ability of DEN.OS to ensure that the Village self-consumes all the energy it generates, without exporting to the grid. That capability directly aligns with the local utility's requirements, which helped facilitate the interconnection and permitting process. Another achievement is that the project is the first multi-family residential storage system using lithium-ion batteries in New York City.

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 resiliency and other grid-supporting capabilities, and transform the energy supply chain. Such systems also lower energy costs, deliver essential load relief for utilities, and help reduce greenhouse gas emissions.



Marcus Garvey Village Microgrid New York City, New York

- Start of Operations: 2017
- Energy storage: 300 kW / 1.2 MWh
- Renewables: 400 kW solar PV
- Other energy source: 400 kW fuel cell
- Client benefits: Lower energy expense, resilient back-up power
- Grid services: 4-hour daily load reduction, solar self-consumption, improved grid reliability

Innovative financing key to project execution

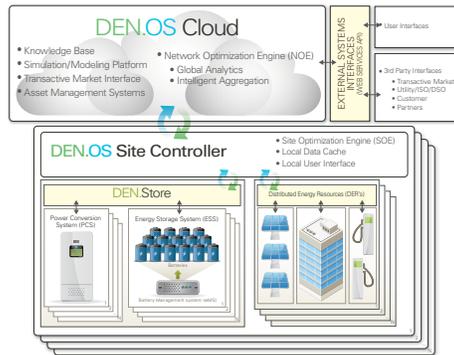
Marcus Garvey project will more than pay for itself through a combination of incentives from Con Edison, along with ongoing revenue generated through participation in demand response and peak shaving power programs. The New York City Energy Efficiency Corporation (NYCEEC), a non-profit finance company that offers loans and alternative financing solutions for energy efficiency and clean energy projects, structured a financing approach that allowed a new business entity to own and operate the energy storage system profitably. NYCEEC financed the project with a 10-year non-recourse project loan. Marcus Garvey Village's owners, L+M Development Partners, and Demand Energy agreed on a "shared savings" operating model to cover debt service and share in revenue generated, allowing both to collaborate to maximize return. Furthermore, L+M paid no upfront investment to install the system.

Stacked revenue streams = improved ROI



- **BQDM Load Relief Compliance**
Called when the day-ahead forecast is projected to 93% of the summer forecasted peak
- **Demand Charge Management Optimized**
Load management from the combined solar + fuel cell + building load + battery operations
- **Market Participation**
 - Day-ahead hourly pricing
 - NYISO winter DR
 - Con Edison DLRP program
- **Resiliency**
Provides back-up power for critical facilities in the event of a grid outage

DEN.OS™ intelligent software



Demand Energy's Distributed Energy Network Optimization System (DEN.OS), based on patent-pending control and economic optimization technology, maximizes the economic returns of behind-the-meter storage systems alone, or in combination with distributed generation. The DEN.OS platform was architected to facilitate the design, integration and operation of energy assets/ services, providing users with

the greatest financial returns across the broadest range of energy storage applications, utility rate structures and economic use cases. The platform is a scalable end-to-end solution that can cover any market segment, including grid-side (utility) storage, microgrids, and traditional generation and distribution networks.

Demand Energy provides a complete turnkey solution that ensures clear accountability by tying together upfront modeling, design and simulation, with the installation and operational monitoring, control, and financial optimization required to deploy storage-plus-DER solutions at speed and scale on either side of the utility meter.

Demand Energy

Demand Energy, an Enel Group Company, has developed a best-in-class Distributed Energy Network Optimization System (DEN.OS) that maximizes the economic returns of behind-the-meter storage systems alone, or in combination with distributed generation (DG). The company provides a turnkey solution (hardware, software and services) that ties together modeling, design and simulation with installation and operational monitoring, control, and financial optimization, to deploy storage-plus-DG systems at speed and scale. The DEN.OS software platform was designed as a scalable end-to-end solution that delivers differentiated value across the entire project life cycle, able to support utility-side, behind-the-meter and microgrid projects. For more information, visit www.demand-energy.com.

