

Case note

New York Power Authority Garden City, Long Island, USA

ABB's battery energy storage (BESS) power conversion system, located at the Long Island Bus refueling depot in Garden City, New York, serves natural gas powered buses covering over 30 million customers.



Battery storage facility at Long Island Bus depot.

The New York Power Authority (NYPA), working with the Metropolitan Transit Authority (MTA), Long Island Bus Company (LIB), installed an advanced sodium sulfur battery energy storage system at the LIB depot in Garden City, New York. LIB operates 330 compressed natural gas buses, carrying more than 31 million passengers annually over 475 square miles of bus routes.

The BESS operates in parallel with the local utility's distribution system to power the depot's gas compressors during the day, and automatically recharges itself from the grid at night when electricity rates are lower. By shifting the compressor demand to nighttime, LIB can avoid paying expensive daytime peak demand rates to the local utility. In addition, the fueling staff works during the day, saving third shift labor costs.

The local utility also benefits because of the reduction of peak power demands on its overburdened distribution system. In the event of a utility interruption, the BESS can also provide back-up power to the compressor station so that LIB can keep the buses running.

Energy Storage Solution

1.2 MW, 7.2 MWh NaS battery system

Grid parallel configuration

Automated load shift

Low maintenance

Low noise

Zero emissions

Benefits

Achieve over \$200,000 cost savings per year by eliminating third shift and allow daytime fueling

Increases back up power for the bus fueling to meet regional emergency response plan

Reduces peak demand on the heavily loaded utility grid, saving over \$25,000 per year in energy costs

A high-efficiency, noiseless, low maintenance, emission free, CO2 saving, peak-shift energy storage system

Power Conversion System (PCS)

The Power Conversion System (PCS) from ABB acts as an interface between the AC grid and the DC batteries, automatically charging or drawing power from the NAS batteries and managing the overall system.

ABB's PCS system consists of:

- Incoming or primary switching and protection
- Main grid-tie transformer
- Auxiliary step-down transformer and power distribution circuit
- Sine wave filter networks
- Inverters
- AC and DC protection
- Local control

Project support

- NYPA – Overall project implementation
- MTA/Long Island Bus – Host site, end user
- ABB – PCS, controls, design, engineering, installation and commissioning
- NGK Insulators, Inc. – NaS battery manufacturer
- DOE/NYSERDA Energy Storage Initiative – Project funding and guidance
- EPRI – Technical assistance, technology transfer
- LIPA – Grid Integration, technical assistance



ABB's Power Conversion System (PCS), which converts energy for charging and discharging the battery system.

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