



# Boa Vista Apartments

## New Bedford Housing Authority

### 75 kW CHP System

#### Project Overview

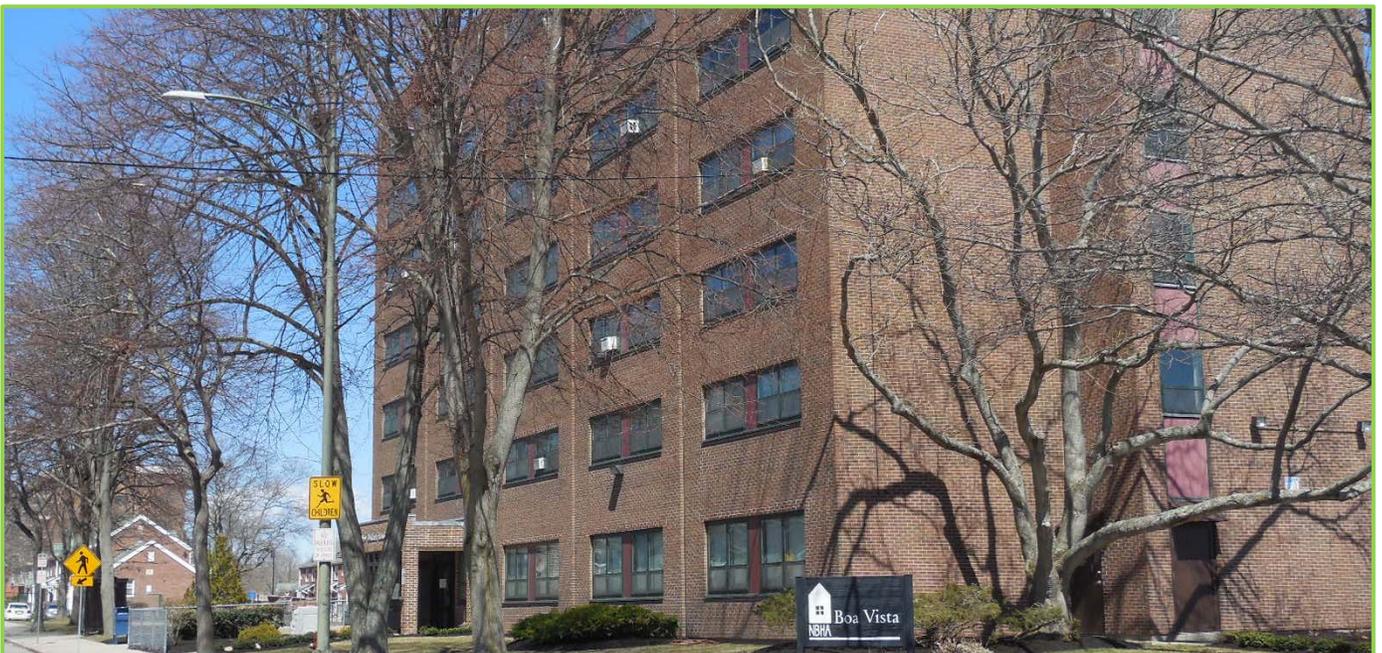
The New Bedford Housing Authority (NBHA) in New Bedford, Massachusetts has combined heat and power (CHP) systems in all three of its elderly high-rise buildings. CHP was installed in the first two buildings around 2005, and after a few years of success with those, NBHA installed a system in the Boa Vista Apartments. The building has NBHA's central office as well as 99 one-bedroom apartments, laundry facilities, and a community room. The CHP system in Boa Vista has been operating successfully since 2009, and it has reduced the building's annual energy costs by 43%.

#### Reasons for Installing CHP

Energy accounts for a large portion of NBHA's operating budget, so the staff continually works to make the facilities more efficient and reduce their energy costs. Through an energy performance contract with Constellation Energy Services, NBHA is able to implement energy-efficiency projects without making a capital investment, and the projects are supported by their energy savings over time. After completing basic measures such as lighting upgrades and weather sealing, Constellation brought in Aegis Energy Services to do a feasibility study for CHP. The study estimated that a CHP system could save NBHA approximately \$400,000 over 10 years, with a simple payback of 6.5 years. The actual savings has surpassed that initial estimate.

#### Quick Facts

**LOCATION:** New Bedford, MA  
**MARKET SECTOR:** Public housing  
**FACILITY SIZE:** 99 apartment units, 80,000 sq. ft.  
**FUEL:** Natural gas  
**EQUIPMENT:** Aegen ThermoPower 75LE CHP System with Reciprocating Engine  
**OPERATION:** 24/7  
**SYSTEM CAPACITY:** 75 kW  
**USE OF THERMAL ENERGY:** Domestic hot water, space heating  
**ANNUAL SAVINGS:** \$58,000  
**BEGAN OPERATION:** 2009



Boa Vista Apartments

## System Design and Operation



Aegen ThermoPower 75LE CHP System

In 2009, NBHA and Constellation Energy Services contracted with Aegis Energy Services to install a 75 kW packaged CHP system to provide electricity and hot water to the building.

The system is the Aegen ThermoPower 75LE model, which includes a natural gas-fueled reciprocating engine, heat exchangers to transfer heat from the engine exhaust to hot water, a microprocessor that allows Aegis staff to remotely monitor system operation, and a control panel. The hot water generated in the system is used for domestic hot water and space heating throughout the building. The system operates year round, with an existing natural gas boiler providing supplemental hot water and serving as backup during the few hours per year when the CHP system is offline for maintenance.

The installed system cost was \$197,000, after an \$18,000 utility rebate, which Aegis applied for on behalf of NBHA.

NBHA purchased a maintenance agreement with Aegis, at an annual cost of approximately \$8,000. The contract includes both monthly service visits and continuous remote monitoring of the system to identify and correct any issues as soon as they occur.

## System Benefits

NBHA has seen the following benefits from the CHP system at Boa Vista Apartments:

- Average annual energy costs from 2010 through 2014 were 43% less than costs for 2008, the year before the system was installed.
- After the cost of maintenance as well as fuel for the CHP system, the annual savings is approximately \$58,000.
- The simple payback period for the CHP system exceeded expectations at less than 4 years.

*“Our CHP system at Boa Vista is performing even better than expected.”*  
- Steven A. Beauregard,  
Executive Director

Due to benefits like these in their high-rise buildings, NBHA has continued to pursue use of CHP to make their other facilities more energy efficient. In 2012, they installed smaller CHP systems in three of their duplex properties.

## Lessons to Share

NBHA staff report that CHP systems require maintenance beyond what staff at facilities like theirs are typically prepared to do, so they believe that a key part of their success with CHP has been having regular maintenance performed by a technician with expertise in CHP systems. They recommend having maintenance performed by a company that specializes in CHP and including that cost in system planning.

## For More Information

### U.S. DOE NORTHEAST CHP TECHNICAL ASSISTANCE PARTNERSHIP

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Date produced: June 2015