



CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

Dedham Health & Athletic Complex

150-kW CHP System



Quick Facts

LOCATION: Dedham, Massachusetts
 MARKET SECTOR: Amusement/Recreation
 FACILITY SIZE: 241,000 Ft² Athletic complex
 FACILITY AVERAGE LOAD: 506kW
 EQUIPMENT: Co-Energy America–Amerigen 8150
 FUEL: Natural Gas
 USE OF THERMAL ENERGY: Boiler, Hot Water, & Pool
 CHP TOTAL EFFICIENCY: 82%
 ENVIRONMENTAL BENEFITS: Higher system efficiency reduces their carbon footprint
 TOTAL PROJECT COST: ~3k/kW (\$450k)
 YEARLY ENERGY SAVINGS: \$151,000
 PAYBACK: ~2-3 years
 CHP IN OPERATION SINCE: 2015

Site Description

Located just outside of Boston, MA, the Dedham Health & Athletic Complex (DHAC) is an athletic facility that offers athletics, summer clubs, camps, and other health and wellness facilities. The complex encompasses spaces for spa treatments, fitness, swimming pools, physical therapy, and medical treatments operating for extended hours daily. The 8-acre complex is home to two 80,000 gallon indoor pools, two whirlpool spas, and a 160,000 gallon outdoor wave/lap pool, all of which contribute to the significant thermal demand of the site. Summer months in an athletic complex create a higher cooling load while the sizeable pools onsite add to the normal heating load during the winter.

Reasons for CHP

The old boiler at DHAC were not able to meet the needs of the expanding business and the owner's growing focus on energy efficacy. After a comprehensive energy efficiency audit, it was decided to replace the aging system with a prepackaged CHP system in the parking lot.

- Ability to lower operating energy costs
- Done in conjunction with boiler renovations and other energy efficiency incentives
- Pre-heat boiler systems, domestic hot water, and heat the facility's swimming pools

CHP Equipment & Operation

DHAC's CHP system is a pre-packaged 150 kW Co-Energy America Amerigen 8150 fueled by natural gas. The CHP system is housed in a sound attenuated container which occupies one parking space. Under conditional testing for meeting 50-70 percent of load, the 8150 has a net system efficiency range of 79-82.5 percent. The system is strategically located in DHAC's parking lot next to the boiler room and is configured with two separate heating loops. The loops are separate to match the configuration of the complex's two separate hot water systems using the waste heat to pre-heat boilers, supply domestic hot water, and keep pool temperatures comfortable. Co-Energy America installed the necessary thermal, electrical, and gas metering for the site to participate in the MA APS Program enabling the CHP unit to generate revenue for the facility owner. The unit is remotely monitored by Co-Energy America and service technicians do maintenance every 1,000 hours of runtime.

Schematic of an Amerigen 8150

Lessons To Share

The system is eligible to participate in the Massachusetts Alternative Energy Portfolio Standard (APS) program, which both lower its utility expenditures and generate revenue. Just 11 months after installation, the project was on track to save DHAC over \$151,000 in energy costs. Additional gas, thermal, and electric metering was installed onsite to by Co-Energy America to facilitate participation in the Massachusetts APS.

The owners made note that understanding the local permitting and regulations can smooth the process of installation and beginning operation. The regulations can range from fire and building permits to applying for interconnection with the local utility as soon as possible. Building inspectors may not understand the intrinsic safety factors of building a CHP and may need to be informed.



The CHP system is housed in a container that has been designed to fit the aesthetic design of nearby structures.

PHOTO COURTESY OF Co-Energy America

For More Information

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