



CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

Cape Codder-Resort & Spa

335-kW CHP System



Quick Facts

LOCATION: Cape Cod, Massachusetts
 MARKET SECTOR: Hotel
 FACILITY SIZE: 260 Room Hotel & water park
 FACILITY AVERAGE LOAD: 525kW
 EQUIPMENT: Co-Energy America - Amerigen 8250 & 8085
 FUEL: Natural Gas
 USE OF THERMAL ENERGY: Domestic hot water, pool heating, dehumidification
 CHP TOTAL EFFICIENCY: 87 %
 ENVIRONMENTAL BENEFITS: 70% emissions reduction
 TOTAL PROJECT COST: ~3k/kW
 PAYBACK: 3 years
 CHP IN OPERATION SINCE: 2007

Site Description

The Cape Codder Resort & Spa (CCR) is a luxurious 4-star resort located in the village of Hyannis, Massachusetts. The resort complex features 260 rooms, as well as two large swimming pools on the property. There is an indoor pool and a year-round outdoor heated swimming pool. The resort features a water park that operates year-round, adding to the existing thermal requirements for the facility that houses guests and staff. The water park advertises an indoor temperature of 85°F, and the outdoor pool is heated 72°F during the winter.

Reasons for CHP

Cape Cod has notoriously high electric and gas prices and grid constraints that minimize the amount of capacity the further out on the land spit one travels. Combine that with meeting the advertised year-round summer temperature in the seasonal climate of New England created a thermal and efficiency challenges that CHP could address. The resort offers guests a heated outdoor pool and 2 heated indoor water parks. This demand accompanied with the high electricity rates, distribution network limitation, and the onsite thermal load of the site are ideal for CHP.

CHP Equipment & Configuration

CCR's CHP system features two synchronous systems: one 250 kW Co-Energy America Amerigen 8250 system installed in 2007, and a smaller Co-Energy America Amerigen 8085 85kW installed in 2009. Sensors relay valuable efficiency, uptime,

and maintenance data to the developer ensuring smooth operations and maintenance. The system is configured to black-start in the event of an outage, which provides additional resilience. The 250-kW system is configured to serve critical load centers such as kitchen, ball room, and one hotel wing during an outage.

CHP Operation

The CCR is a year-round resort, therefore it maintains a relatively high energy demand in all seasons. The 250-kW system was installed to provide domestic hot water to facilities, as well as heat the indoor wave pool. The system is also used to de-humidify the pool area. The smaller 85kW system was installed after the 250kW system proved to be a success and provides additional domestic hot water and heats the outdoor pool. While the hours that guests can access pool areas may vary, the thermal requirements must be maintained and the electrical loads likely follow the occupancy patterns of the resort.

Sustainability Programing

The Cape Codder Resort & Spa has taken a measurable step towards a more positive impact on the environment, citing a 70% reduction in their carbon footprint after installing CHP. The resort is recognized by the Green Leaders Program for their outstanding environmental attributes. This program is a collaboration between TripAdvisor, the United Nations Environment Program, and the International Tourism Partnership to recognize hotels, resorts, and eco-lodges for their environmental stewardship. The recognition falls into several tiers, with CCR being recognized in the silver-level program for “engaging in environmentally friendly practices”.



The 335kW CHP systems is housed in two separate containers. The first to be installed was the 250kW AMERIGEN8250, followed by the 85kW AMERIGEN8085

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Lessons To Share

CHP can serve many different goals, from energy load cost management to environmental impact reductions to reliability, it is important to consider site goals on all different topic areas to see if CHP would make way towards meeting those goals. The Cape Codder had both resiliency goals and energy reliability goals that were met by CHP. It is also important to consider what the configuration and layout of the system will be in order to make sure the site owner gets the desired outcome. CHP unit placement can be very flexible and there are different systems that can black start or need an outside energy source to start and operate.

For More Information

[U.S. DOE NEW ENGLAND CHP TECHNICAL ASSISTANCE PARTNERSHIP \(CHP TAP\)](#)

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