



# Duncaster Retirement Community

## 150-kW CHP System



### Quick Facts

LOCATION: Bloomfield, CT  
 MARKET SECTOR: Retirement Community & Health Center  
 FACILITY SIZE: 87 acre  
 FACILITY PEAK LOAD: 530 kW  
 EQUIPMENT: 2 Aegis AEGEN Thermopower 75 CHP Modules (150kW)  
 FUEL: Natural Gas  
 USE OF THERMAL ENERGY: Space heating and hot water  
 CHP TOTAL EFFICIENCY: 82.1%  
 ENVIRONMENTAL BENEFITS: Decreased CO<sub>2</sub> emissions, decreased peak energy demand from grid  
 YEARLY ENERGY SAVINGS: \$125,000  
 CHP IN OPERATION SINCE: 2007  
 PAYBACK: Under 3 years with incentive

### Site Description

Duncaster is a retirement community and health center in Bloomfield, Connecticut. The 87-acre complex includes housing, administrative offices, a health center, an aquatics center, and assisted living facilities. The Caleb Hitchcock Health Center is an integral part of the Duncaster campus, providing on-site physician services, rehabilitation, and long-term care to residents. Registered nurses are on staff 24 hours a day, rehab is provided seven days a week, and units for long-term care residents are provided with plenty of natural light, including a central atrium.

### Reasons for CHP

Duncaster was seeking to increase efficiency, flexibility, and cost-savings for the Caleb Hitchcock Health Center. On-site distributed generation in the form of combined heat and power allows them to meet all of those goals. The high efficiency CHP system decreases the total cost of electricity and heating for the building versus buying electricity from the utility and separately producing heat in its boilers. This supply of electricity avoids incurring high demand charges from the utility by shaving off demand from the grid at peak rate times of the day.

- Ability to offset demand charges from the utility,
- Lowering utility electricity usage and rate,
- Decreased heating and electric costs and maintenance for facilities

## CHP Equipment & Operation

The facility is powered by two Aegis AEGEN Thermopower 75 kW CHP units, for a total of 150 kW. The electricity is used to offset demand from the grid. The recaptured waste heat is used for space heating and hot water needs in the health center.

The independently controllable operation of the CHP system varies the timing and amount of power generated. The system controls/reduces their peak load, minimizing the cost of electricity from the utility, and providing The Caleb Hitchcock Health Center with the electricity it needs without high demand charges from the utility. The CHP system provides 40% of the facility's electric demand.



Aegis AEGEN Thermo power 75 kW engine. Duncaster has

## Connecticut Energy Independence Act

Duncaster was the first project to receive funding for distributed generation under Connecticut's Energy Independence Act (EIA). This incentive funding, administered by the Connecticut Department of Public Utility Control, promotes distributed generation such as CHP to decrease peak demand on the utility grid, increase resiliency, and decrease greenhouse gas emissions.

Under the EIA, utilities are obligated to obtain an increasing amount of their load from distributed generation sources, up to 1.28 million MWh (megawatt-hours). The program provides one-time capital-cost subsidies from \$200 to \$500 per kW, as well long-term financing and incentives to offset maintenance costs.

## Lessons to Share

The Duncaster team took the energy upgrades to their whole facility working with the CHP installer, the local utility, and taking advantage of state energy incentives. They educated residents on energy saving methods, installed programmable thermostats, replaced lightbulbs, and cut energy consumptions and costs by \$18,000 per year. With state incentives under the EIA, payback for the project is less than 3 years. The Aegis CHP modules run quietly, reliably, and flexibly, allowing the Caleb Hitchcock Health Center to operate smoothly, efficiently, and at minimal cost. Duncaster has been so pleased with CHP that it has already ordered another 150-kW CHP installation for their administrative building. Taking a whole facility approach to reducing the Duncaster energy consumption they were able to achieve their energy consumption and costs.

## For More Information

U.S. DOE NORTHEAST CHP  
TECHNICAL ASSISTANCE  
PARTNERSHIP (CHP TAP)  
Thomas Bourgeois  
(914) 422-4013  
[tbourgeois@law.pace.edu](mailto:tbourgeois@law.pace.edu)

AEGIS ENERGY SERVICES, INC.  
Diane Molotokos  
Project Engineer  
(413) 536-1156  
[www.AegisEnergyServices.com](http://www.AegisEnergyServices.com)

MORE CHP PROJECT PROFILES:  
<http://northeastchptap.org>  
Date produced: 2017