



NORTHEAST  
**CHP**  
APPLICATION  
CENTER

combined heat & power in healthcare

# Notre Dame Long Term Care & Assisted Living Centers

## 150 kW CHP Application

### Project Profile



### Project Overview

Late in 2003, Carol Smith, the Facilities Director at the Notre Dame Long Term Care Center, had just noticed how high the electricity bills were getting when marketing information from Sustainable Energy Solutions Inc. caught her eye. She responded to learn more about how combined heat and power could reduce their energy costs.

By March 2004, a CHP system had been installed in the 123-bed long-term care facility. That was followed in May 2004 by another system in the adjoining assisted living facility, which houses 200 people.

Each building has a 75 kW natural gas-fired engine that is run continuously. These provide 75% of the electricity used on site, and the hot water output is enough to satisfy all of the facility's domestic hot water demand and much of the space heating.

System performance has exceeded expectations. The total equipment and installation cost for each CHP system was \$125,000, with a payback period of only 3 years. Notre Dame's gas and electric utilities each offered rebates to reduce the investment required by the facility.

The CHP projects led to an increased awareness about energy amongst the management of the facility and the Sisters of Notre Dame. According to the Facilities Director, "We are a better business now because of it. Now we think about energy in our decision making, and we consider how our decisions affect the environment and our future costs."

### Quick Facts

**Location:**

Worcester, Massachusetts

**Installation Date:**

March & May 2004

**CHP Equipment:**

Two 75 kW Tecogen engines

**Additional Equipment:**

Gas-fired hot water heater  
Rooftop heating/air conditioning units

**Type of Fuel:**

Natural gas

**Heat Recovery Applications:**

Hot water  
Space heating

**Project Cost:**

\$250,000

**Simple Payback:**

3 years

The Sisters' exposure to the potential of energy efficiency and renewable energy has also led to involvement in charitable projects, such as using solar energy to provide electricity for water purification and medical clinics in Africa.

Carol Smith now considers installing these CHP systems to be "one of the smartest decisions I have made in business." She also believes it is important for them to show leadership in energy efficiency. "Healthcare should be leading the way because our work is so tied to the environment."



## Energy Overview

The long term care facility and assisted living facility each have a 75 kW Tecogen engine. As well as domestic hot water, thermal output from the engines is used for the forced hot water baseboard heating system. Rooftop units provide supplemental heating, as well as air conditioning.

An energy metering system was recently installed to track production, improve budgeting, locate inefficiencies and optimize energy use.

The facility previously used two 500 gallon hot water tanks with gas-fired hot water heaters. The older of the tanks was due for replacement, at a cost of \$35,000, but the CHP system has displaced that need. The other tank is now used for backup.

Future expansion of this CHP system to also provide air conditioning has been considered. The Sisters of Notre Dame run several schools and other institutions in Massachusetts, and they are looking into CHP and other energy projects at some of those facilities.

## Benefits

- Reduced energy costs.
- CHP system eliminated the need to replace the older of their two hot water heaters.
- Increased awareness of energy, environmental impacts and operating costs.

### For Further Information Contact:

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*Carol Smith,  
Facilities  
Director*

