



Simpson House Senior Services

265 kW CHP Plant



Site Description

The Simpson House, located in Philadelphia close to Fairmount Park, is a not-for-profit Continuing Care Retirement Community operated by Simpson Senior Services. The organization provides independent and assisted living facilities, a health and rehabilitation center, and a memory impairment program. Founded In 1865, Simpson House is America's oldest retirement community affiliated with the United Methodist Church.

Quick Facts

- LOCATION:** Philadelphia, PA
- MARKET SECTOR:** Healthcare
- FACILITY SIZE:** 282,930 Square Feet
- FACILITY PEAK LOAD:** 375 kW
- EQUIPMENT:** Reciprocating Engine, Absorption Chiller, Heat Recovery System
- FUEL:** Natural Gas
- USE OF THERMAL ENERGY:** Heating, Cooling and Domestic Hot Water
- ENVIRONMENTAL BENEFITS:** reduced net carbon emissions by 300 metric tons/year
- PROJECT STRUCTURE:** Energy Services Agreement
- TERM:** 20 Years
- CHP IN OPERATION SINCE:** 2017

Reasons for CHP

Faced with rising energy and facility maintenance costs and an aging facility infrastructure, which included a 150-year-old boiler system, the Simpson Senior Services Board of Directors contracted Blue Sky Power to develop a solution. The proposed solution needed to address reducing energy costs and overall emissions and provide energy security as well as reducing overall operating costs. Blue Sky Power developed, financed and constructed a 265 kW combined heat and power plant, upgraded existing electrical infrastructure, installed a building management system, and retrofitted lighting and related sensors and controls. Blue Sky Power developed the projects at no cost to Simpson Senior Services, including engineering, securing available state clean energy grants, selecting a project financier, selecting a contractor, providing project management, coordinating utility interconnection design, and approvals and negotiation of the 20-year Energy Services Agreement. With high food and pharmaceutical costs that are standard in the senior care sector, a predictable energy cost slope was considered critical for the Simpson House to meet its mission. Through a new and efficient infrastructure and long-term energy service agreement, the Simpson House had a solution to address these needs.



265 kW Packaged CHP System

PHOTO COURTESY OF Blue Sky Power

The site layout at Simpson House enabled the CHP system to be installed outside next to the facility electrical room. The CHP system, an Energy Rudox Model ER265UL, was provided by Centrica Business Solutions/Energy-Rudox and consists of a natural gas fueled MAN E2842 E 312 reciprocating engine, a Stamford 265 kW generator, and a heat recovery system—all packaged in a weathertight acoustic enclosure. The outside siting was selected to enhance access to the system components for maintenance functions and provide space options for any future upgrades to the system. The Simpson House CHP system, which became operational in 2017, offsets approximately 55% of the facilities' electric demands. The CHP system produces 1400 MBH by capturing thermal energy from the engine exhaust and engine jacket water, which is used in the facility to offset approximately 20% of the facility thermal load.

Project Financing

The \$3,500,000 project was developed and funded by Blue Sky Power at no cost to the Simpson House. The services provided by Blue Sky Power included engineering, contractor selection, project management, utility interconnection, negotiation of a 20 year Energy Services Agreement with Centrica Business Solutions, securing a \$400,000 Pennsylvania Clean Energy Grant, and developing and executing a lease agreement and other related facility agreements. The project also qualified for \$200,000 through the PECO CHP Incentive program.

"The project development model with Blue Sky Power provided us with energy security, energy efficiency and reduced emissions with our CHP system, without impacting our budget with upfront financing."

Paul Zarelli

Facilities Manager, Simpson House

For More Information

US DOE Mid Atlantic CHP Technical
Assistance Partnership
Dr. Jim Freihaut, Director
814-863-0083
Jdf11@psu.edu
www.machptap.org

Blue Sky Power
856-888-1311
www.blueskypower.com

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