Margaret McLaughlin McCarrick Care Center, Somerset, New Jersey

Carbon Abatement Hospital Energy Efficiency Program

Estimated Annual Utility Cost Savings:
$7,290

Total Utility Incentive Rebate:
$201,650

Energy Savings:
7,394 therms

Project Implementation Costs:
$201,650

Project Simple Payback:
27.7 years

SUMMARY

As part of the PSEG Carbon Abatement Hospital Energy Efficiency Program, Willdan audited and analyzed the Margaret McLaughlin McCarrick Care Center, member of the St. Peter's Health-care System. Willdan interviewed facility staff to understand the operation of the CHP plant. Facility personnel informed Willdan that the CHP operates only during winter, when hot water and domestic hot water heating loads are present. Willdan's recommendation to keep the existing CHP module and replace the boilers with a similar-size module saved McCarrick 7,394 Therms annually, translating into an annual cost reduction of $7,290.

GOALS AND CHALLENGES

As a part of PSE&G Carbon Abatement Hospital Energy Efficiency Program's Investment Grade energy Audit (IGA) McCarrick Care Center's existing central plant included an 18-year-old TecoGen CHP module with a generation capacity of 60 kW, which was not properly sized to meet current demands at the site. Exhaust heat from the module was used for heating both hot and domestic hot water, and the system operated only during the winter. McCarrick relied on Willdan to perform an investment-grade audit (IGA) of their site to determine the optimum approach for upgrading or replacing the module.

SOLUTIONS AND OUTCOME

Willdan conducted a site audit to review the existing system design, operations, and operating cost and to establish a baseline for system performance. Our engineering staff:

- Analyzed the care center's utility bills to establish a baseline for energy use for heating, cooling, and other systems
- Conducted site inspections to collect name-plate data on all the equipment, including the CHP
- Analyzed electricity from the utility or generated by the CHP, system thermal efficiency, and overall fuel efficiency

As a part of the IGA, Willdan developed a $/kWh comparison between grid power vs. generated power including efficiency of heat recovery. Willdan presented McCarrick with three options:

- Replace the 18-year-old CHP plant with a new, more efficient module, operating year-round to take advantage of favorable gas prices
- Keep the existing CHP module and operations, and replace the boilers with a similar-size module
- Decommission the CHP, and replace the boilers with more efficient, properly sized units

Based on economic considerations and equipment conditions, Willdan recommended that the hospital keep the existing CHP module and replace the boilers with a similar-size module.

This was one of the measures that was selected with other measures; i.e., interior/exterior lighting retrofit and controls, replace PTAC units , replace old existing rooftop units, install premium efficiency motors, install EC motors for coolers and freezers, and insulate hot water piping. The overall project cost was $734,105 and energy savings was 324,838 kWh and 10,731 therms; demand savings was 45 kW; and cost savings was $65,478, with a payback of 11.2 years.

***RESULT:** Willdan initiated replacement of the existing CHP with a more efficient CHP as an energy efficiency measure and not a fuel switch, hence it was added to the program design .*

About Margaret McLaughlin McCarrick Care Center

The Margaret McLaughlin McCarrick Care Center is a not-for-profit, 120-bed skilled nursing facility that is well known for the comprehensive, quality care provided to its residents.

WILLDAN

www.willdan.com