

St. Joseph's Wayne Hospital, Wayne, New Jersey

Investment-grade Audit and Chiller and Cooling Plant Improvements

Estimated Annual Utility Cost Savings:

\$624,123

Total Utility Financing:

\$3,886,959

Energy Savings:

3,331,941 kWh

384 kW

Project Implementation Costs:

\$3,886,959

Project Simple Payback:

6.2 years



SUMMARY

St. Joseph's Regional Medical Center partnered with Willdan Energy Solutions in the completion of a \$1.1 million energy efficiency project that implemented a smooth process with a quick turnaround. In February 2012, Willdan performed an investment-grade audit (IGA) for St. Joseph's Wayne Hospital, a 328,000-square-foot, 40-year-old facility in Passaic County in Northern New Jersey. Willdan completed all phases of the investment-grade audit, including utility funding application review, in-depth site surveys and equipment inspections, detailed engineering analyses, and report preparation. Because Willdan's engineering team diligently identified measures with the largest opportunity for energy savings, St. Joseph's Wayne Hospital will save an estimated \$624,123 per year in electricity costs through a consumption reduction of 3,331,941 kWh per year and an overall facility demand reduction of 384 kilowatts (kW). Renovations throughout the hospital have received positive reactions from employees.



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GOALS AND CHALLENGES

Investment-grade Audits Identify 3,331,941 kWh in Energy Savings

St. Joseph's Wayne Hospital sought to reduce carbon emissions by lowering the energy consumption of its hospital, obtaining 100% up-front financing from the utility for eligible efficiency installations. St. Joseph's Wayne Hospital is repaying about half the cost at zero percent interest over a 36-month period. The hospital's energy advisor since 2009, Willdan thoroughly interviewed facility managers and defined upgrade objectives and equipment opportunities, performed in-depth room-by-room surveys of the facilities, and performed utility bill and baseline analyses. Our engineering team:

- Performed an IGA, defined as an ASHRAE level II+ energy audit
- Developed inventories of all of the existing equipment recommended for replacement
- Provided an IGA report with a list of energy efficiency measures, cost estimates and energy savings, compared to existing conditions (baseline)
- Developed an energy model using eQuest to understand the energy usage of different systems

RESULT: The hospital will save \$624,123 per year in electricity costs through a consumption reduction of 3,331,941 kWh per year, 13,000 MMBtu, and an overall facility demand reduction of 384 kW.

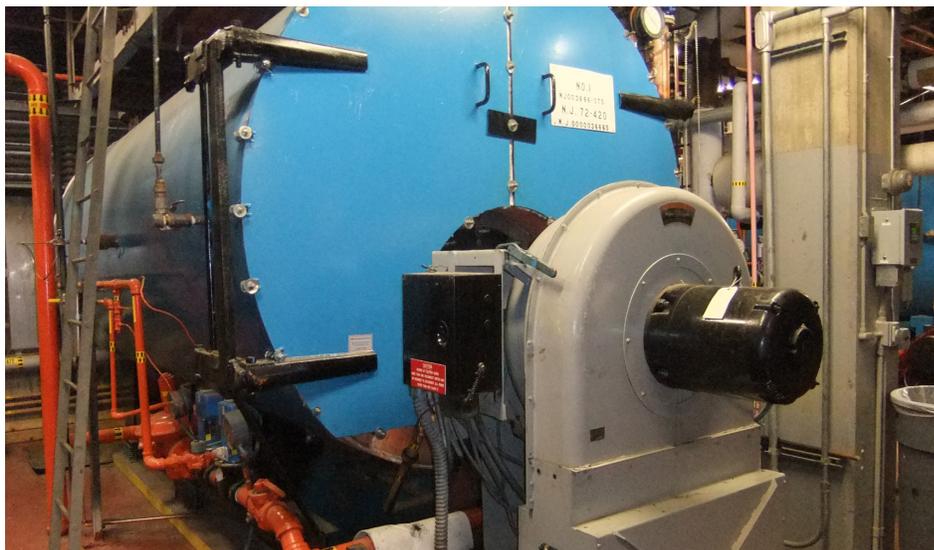


SOLUTIONS AND OUTCOME

Energy Conservation Measures Maximize Savings

Willdan performed energy savings calculations for the selected energy conservation measures (ECMs), generating savings estimates for implementation of each ECM. A number of energy conservation measures were implemented for St. Joseph's Wayne Hospital, including chiller and cooling plant improvements, air handling improvements and lighting upgrades:

Willdan currently performs IGAs for other hospital and acute care facilities in northern/central New Jersey. To date, we have completed 19 IGAs (~8.1 million square feet of space) in the past 16 months and have two more audits in progress—identifying more than 30+ million kWh and ~1 million therms gas/ oil energy conservation savings.



- Replacement of boilers, heat exchangers and hot water steam coils
- Replacement of chillers with new high-efficiency chillers with VFD compressors
- Resetting of hot / chilled water supply temperature
- Revision of chiller staging with new chillers and operation of CH-2 only when required
- Installation of VFDs on chilled water pumps, hot water HVAC reheat pumps, domestic cold water pumps and controls to maintain minimum pressure
- Replacement of all air-side pneumatic dampers with new electric actuators for improved control
- Replacement of existing pneumatic thermostats in patient rooms with new wireless digital thermostats
- Installation of occupancy sensors in applicable spaces (restrooms, private offices, storage spaces, etc.)
- Upgrade of general lighting fixture and controls

RESULT: *St. Joseph's Wayne Hospital approved ~95% of the recommended energy efficiency measures.*

Results:

- 3,331,941 kWh annual savings
- 384 kW of peak demand savings
- Annual cost savings of \$624,123
- Project cost \$3,886,959
- Payback period of 6.2 years

About St. Joseph's Wayne Hospital

St. Joseph's Wayne Hospital, a division of St. Joseph's Regional Medical Center, is an acute care community hospital in Wayne, NJ. St. Joseph's Regional Medical Center is an academic tertiary care state designated trauma center and three-time recipient of the Magnet Award for Nursing Excellence.