Siemens Delivers Infrastructure Improvements and Energy Efficiency to Waterbury Hospital

Located in Western Connecticut, Waterbury Hospital is a full-service health care institution serving the 280,000 citizens of Waterbury and its surrounding communities. The 574,000 square foot facility is a private, non-profit acute care teaching hospital licensed for 367 beds and is affiliated with the Yale School of Medicine, the University of Connecticut School of Medicine and Connecticut Children’s Medical Center.

Client Objectives
In 2004, Waterbury’s new director for facility operations, Steve Jalowiec, was faced with major HVAC systems that were past their intended service lives and rising energy expenses comprising nearly 2% of the hospital's annual operating budget. Jalowiec identified that an energy saving performance contract could provide Waterbury with the right solution for desperately needed equipment upgrades and energy saving retrofits. A performance contract, Jalowiec determined, could pay for upgrades via energy savings realized during the length of the contract and enable Waterbury to preserve its capital budget for other projects. Additionally, the improvements would provide better overall control of the facility environment, improved patient and staff comfort, and reduced environmental emissions.

Siemens Solutions
After a careful vetting process, Waterbury Hospital selected Siemens Building Technologies, Inc. to help it meet its energy and infrastructure goals. Siemens was selected, according to Jalowiec, because it was one of only a few providers with the capabilities and experience required for the demanding job and also offered a strong local presence and a track-record of successful projects. The agreement, signed in August 2006, defined a two-phase program of HVAC system and building envelope upgrades. Once improvements were completed, Siemens guaranteed more than $10 million in avoided annual energy costs over the 10-year life of the performance contract.

To begin the project, Siemens conducted an engineering-grade energy audit, to identify system and building improvements that would provide the greatest energy savings per dollar spent. From its findings, Siemens identified a series of retrofits and upgrades that would result in annual energy savings of 947,000 kilowatts of electricity and 418,000 therms of natural gas. The improvements also had the added benefit of reducing greenhouse gas emissions by 65 million pounds — the equivalent of 69,000 barrels of oil — over 10 years.

Infrastructure upgrades and energy savings retrogrades put in place by Siemens include:

Heating and Air Conditioning
Waterbury’s two existing chillers were each 30+ years old and barely able to keep up with peak demand of 1,500 tons of cooling capacity. Siemens replaced these units with two, more efficient units from Baltimore Air Coil (BAC). With the new chiller configuration, most of the hospital's cooling needs can be handled by one chiller, saving approximately 44% over previous cooling costs and providing much needed system back-up.
Boiler and Steam Plant
Siemens upgraded Waterbury’s boilers with a new reclaimer and completed repairs and refits to the steam traps and other elements of the steam condensate return system. These improvements decreased fuel consumption, by lowering demand, and also reduced requirements for makeup water by delivering pre-heated water to boilers.

Water Systems
In Waterbury's laundry facilities, Siemens installed state-of-the-art ozone technology that allows cold water washing, reducing demand for natural gas and resulting in a cleaner, less harsh, wash. Additionally, other plumbing retrofits made by Siemens should save 80 million gallons of water over the course of the contract.

Building Envelope
Siemens suggested a thorough program of weather stripping for all interior doors. Overall, building envelope improvements were a key factor in reducing Waterbury's cooling load by about 50%.

Lighting
While much of Waterbury’s lighting had been replaced in recent years, Siemens assessment identified some remaining high-pressure sodium lights that were replaced with more efficient fluorescents. The hospital was also able to take advantage of new occupancy sensor technology to reduce energy waste through more precise control.

Energy Management System
Siemens was able to help Waterbury finish replacing its energy management system and power meters, a project that started years earlier but stalled due to lack of funds. These upgrades provide Waterbury with lower utility bills and a clear picture of its energy use.

Client Results
With the project completed, Waterbury began realizing the benefits of its energy savings performance contract. In 2007 the hospital received a check for $350,000 from initial energy savings and used those funds to offset the cost of other needed capital improvements. “We are realizing huge savings,” notes Jalowiec, “well beyond what we were expecting at this point.” Additional capital projects at Waterbury, once considered to be out of reach, are now viable.

Waterbury has also noticed the soft benefits generated from the improvements. According to Jalowiec, “Maintenance staffers seem to be smiling more with fewer fires to put out and the staff and doctors are proud to know that Waterbury is on a greener, more sustainable path.”