

Bon Secours St. Francis Health System notches big energy savings

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Energy conservation and its attendant savings are on the agendas of nearly every U.S. hospital these days. And as Greenville, SC-based Bon Secours St. Francis Health System proves, successful energy efforts begin with good planning and execution – from the relatively simple “low-cost, no-cost” programs to comprehensive, long-term energy management programs.

Shortly after becoming the only system in the country in April 2011 to earn the elite Environmental Leadership Circle Award from Practice Greenhealth, Bon Secours St. Francis’ Eastside campus earned the prestigious ASHE award (American Society for Healthcare Engineering) for achieving energy consumption reduction of more than 12 percent, an effort achieved by mostly low-cost, no-cost projects. The hospital also earned special “E2C” designation from ASHE for its innovative power reduction efforts. E2C is ASHE’s Efficiency Commitment program.

All told, the Greenville, SC-based two-hospital system’s energy conservation projects netted more than \$850,000 in cost savings in just two years, according to Kimball Trotter, CHFM, CHSP, CHC, engineering director.

Getting started

While the small hospital system endeavored to save energy through various small projects for several years, it wasn’t until its parent, Marriotsville, MD-based Bon Secours Health System, made energy conservation in particular, and environmental sustainability, a major corporate objective in 2007, said Karen Schwartz, FACHE, vice president, support services for Bon Secours St. Francis. Its Corporate Sustainability Commitment program, as it came to be called, includes a focus on assessment and reduction of the system’s carbon footprint through reduction of energy use.

Structure of the energy program

To lead Bon Secours Health System’s corporate program, an Environmental Stewardship Organization was established, led by Bon Secours Health Ministries’ board of directors and composed of the corporate and individual system green teams.

A key element of the organization was a plan to seek partnerships and strategic business relationships that leverage expertise, support, recognition and potential funding sources. These included local utilities and EPP supply and service vendors.

MAJOR ENERGY ACHIEVEMENTS

- St. Francis-Eastside honored with prestigious ASHE award for achieving energy consumption reduction of more than 22%
- Mostly low-cost, no-cost projects have netted over \$150,000 in energy rebates from system’s power supplier
- Energy conservation projects netted more than \$850,000 in cost savings in one year alone (equivalent to nearly \$16 million in new revenue based on Energy Star calculations)
- Built energy-efficient employee transportation system, including vehicle charging stations

At the same time, a corporate energy management council was established to oversee major energy conservation projects, become active partners in the EPA's Energy Star program (including purchasing rated energy efficient equipment and performing energy audits) and supervise energy supplier cost management projects for such things as energy procurement and energy invoice audits and recoveries.

At Bon Secours St. Francis and other systems under the corporate umbrella, management and its green teams were charged with annual objectives, including managing their Energy Star portfolio, an interactive energy management tool that allows tracking and assessing energy and water consumption across a system's entire portfolio of buildings in a secure online environment.

The tool was used as the basis of an initial assessment for each local system, as well as an education and awareness exercise to assist each local green team learn about the full range of ecology initiative opportunities and assess their respective starting status, Schwartz said. Global targets were set using the tool. These included identifying at least three Quantifiable Energy Reduction Initiatives in 2008 and achieving 10% reduction in energy use by 2011.

Recognizing the significance of energy conservation and cost management efforts and the financial rewards they represent, Schwartz established a special task force at her system dedicated to energy. The group reports back to the Bon Secours corporate Green Team. "We knew these kinds of projects deserve a significant amount of time and attention so we're able to roll out something's that's sustainable," she said.

Capitalizing on Energy Star

Schwartz also attributes a great deal of the energy program's success to pursuing Energy Star ratings on its equipment, proudly noting that the Greenville facility was the first South Carolina hospital to be named an Energy Star Partner, an organization that commits to continually improving energy efficiency. Today, every Bon Secours Health System hospital is an Energy Star Partner, and every piece of equipment purchased must have the Energy Star rating. "The Energy Star program opens your eyes and makes you start paying attention to the details such as lifecycle costs,"

Schwartz said. "It's quite amazing how quickly you can start making a difference." For example, the system replaced its downtown campus boiler with an energy-efficient model at a cost of \$300,000, achieving a 100% return on investment in just one year.

Two fronts: conservation and cost management

Energy efficiency at Bon Secours St. Francis is tackled two major ways: through energy conservation and energy supplier cost management. Energy conservation entails utilizing Energy Star Portfolio to perform monthly monitoring, and energy audits, which include walk-through analyses, energy surveys, analyzing capital-intensive modifications and retro-commissioning. Energy supplier cost management includes audits of bills to verify accuracy and optimize energy rate structures.

The system's consumption is monitored by an outside partner, KLG Jones, "which analyzes our utility invoices and breaks them down where they are usable numbers for us," Trotter added. "Now, we look more at our consumption, such as BTUs per square foot. That makes it more controllable."

MAJOR ENERGY OBJECTIVES FOR EACH BON SECOURS SYSTEM

- Identify at least three quantifiable energy reduction initiatives in year 1 (2008)
- Achieve at least 10% reduction in energy use by 2011



Bon Secours St. Francis-Eastside staff celebrate their E2C designation from ASHE

Bon Secours St. Francis also partnered with its local supplier Duke Energy, which brought in an engineering firm to perform an energy audit and identify and prioritize potential capital improvement and other projects, according to Trotter. The audit led to a number of improvements, including equipment replacement and installation of energy-efficient lighting and energy sensors, and Bon Secours also became a “Power Share Partner” with Duke Energy, which entitled it to more than \$150,000 in rebates as a result of installation of more energy efficiency lighting.

TWO-PRONGED APPROACH	
Energy Conservation	Energy supplier cost management
Energy Star Portfolio Manager <ul style="list-style-type: none"> • Monthly Monitoring • Benchmark Comparison Energy facility audits <ul style="list-style-type: none"> • Walk through analysis • Energy survey and analysis • Detailed analysis of capital intensive modifications • Retro-commissioning 	Energy invoice audits <ul style="list-style-type: none"> • Verify billing accuracy • Optimize rate structure

While Duke Energy is the region’s only source for electricity, energy procurement for power has gone smoothly. “Duke Energy has been a really good partner with us and do have some of the some low rates in the country,” Trotter said, adding that the Bon Secours Energy Management Council does work with IC Thomasson, a regional engineering consulting firm, to help Bon Secours St. Francis purchase natural gas.

Breaking down the savings

By reducing energy use (gas and electricity) and becoming better at procuring energy, the healthcare system has saved \$850,000 in energy costs over a two-year period beginning in fiscal year 2009, Trotter said. Energy Star calculations shows that is the equivalent of nearly \$16 million in new revenue.

So far in fiscal year 2011, the two-hospital system has spent \$236,000 less over the same period the year before, he added.

Among the measures Trotter attributes a major part of the savings to include:

- *Smarter chiller operations.* “Chillers are one of the largest users of electricity,” Trotter said. “At our eastside hospital, we’re able to operate without a chiller for over two months.” Balancing the water and adjusting the temperature set points have allowed the downtown campus to go from running two chillers to only one for over five months.
- *Energy-efficient lighting.* “Lighting is another big user of electricity and we now have approximately 50% of the more energy-efficient lights in both hospitals,” he said. The system is rolling out the switch in phases, replacing outdated incandescent and fluorescent bulbs with energy efficient compact fluorescent and T8 bulbs.
- *Steam trap maintenance.* The system now ensures all steam traps are working, replacing worn out traps with energy efficient version when needed, Trotter said.
- *Temperature monitoring.* Trotter’s staff daily monitors heating and cooling set points to ensure “we are not heating and cooling at the same time.” And thermostats in most areas of the hospital are locked at around 72 degrees Fahrenheit using electronic controls or thermostat guards. “Not only does this reduce customer complaints of hot and cold spots, but the higher usage of our cooling and heating systems,” he said.
- *Efficient generator testing.* Instead of simply performing a routine test of the system’s backup generators, engineering staff switches all system power at once to the backup units and leaves the main power off, saving electricity and testing the backup simultaneously.

Low-cost, no-cost initiatives

Out of the gate, St. Francis Health System's energy initiatives took on the so-called "low cost, no cost" efforts, which include checking and repairing door and window seals, temperature monitors and powering down unneeded lights and equipment.

A set of 24 standardized no-cost, low-cost energy conservation measures, developed by the corporate Bon Secours Energy Management Council, were implemented across all facilities, including those at Bon Secours St. Francis.

No-cost initiatives include:

1. Requiring each employee to review system energy tips on an annual basis. "This is a form of behavior awareness and is simple information that inspires and motivates," said Trotter.
2. A standard system-wide policy to turn off lights in unused clinical locations after hours.
3. Powering off lights in vacant areas by security personnel during evening rounds.
4. Turning lights off in unused areas after 15 minutes.
5. Requiring staff to turn off monitors and computers at the end of the day or when away from desk for any length of time.
6. A standard system-wide policy to close loading dock doors after deliveries to eliminate the loss of heat/air.
7. Cutting off air handlers during peak times in conference rooms and offices (non-patient care).
8. Educating staff and patients to turn off televisions when not in use.
9. Resetting reheat water systems based on the season (e.g., such systems are needed to be on high during the summer).
10. Adjusting chiller discharge set points to get most efficiency out of the equipment, while maintaining chilled water requirements.
11. Making use of a manual color option on color copiers.
12. Ensuring all facilities have appropriate evening heating and cooling plans and systems.
13. Setting ranges in medium-to-low impact areas for air handlers in automated systems.
14. Ensuring that all equipment has automatic save modes.
15. Increasing air filter life from 30 to 45 days.
16. Static pressure reset set downward when building not at full load.
17. Supply temperature reset to automatic according to zones.
18. Pressure and temperature reset on pumps.

Low-cost initiatives include:

19. Changing out lights to energy-efficient T8s.
20. Putting outdoor lighting on photocells or astronomical digital time clocks.
21. Ensuring all doors and windows have appropriate seals.
22. Balancing chilled water systems.
23. Installing light sensors in public bathrooms, conference rooms and offices.
24. Setting temperatures and put thermostat guards on the thermostats to eliminate staff from changing.

Energy-efficient transportation initiative

With the ever-increasing cost of fuel, hospital systems like Bon Secours St. Francis are seeking ways to lower their carbon footprint while saving money. To that end, the system implemented a series of transportation initiatives by partnering with Project GreenLink, a Greenville transit system initiative, Clemson University and the City of Greenville).



Campus bus acquired through IDOT grant

These included developing a bus route connecting all campus locations and acquiring a dedicated 18-passenger bus for employees and visitors to use. The bus was made possible by a Job Access and Reverse Commute (JARC) grant offered by the U.S. Department of Transportation.

Other projects included providing electric vehicles on campuses and electric vehicle charging stations on the downtown campus.

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