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Improving Operations Through Efficiency

Multifront energy savings plan increases patient comfort, reduces costs.

Healthcare organizations today are seeking energy efficiency solutions to improve patient comfort, help them act as good environmental stewards and reduce costs. For a health system containing facilities that are up to 100 years old, such infrastructure upgrades are even more important. With that in mind, Signature Healthcare, Brockton, Mass., undertook several initiatives in 2018 to update old equipment and bring new efficiencies to the health system.

A Multipronged Plan

In 2018, Signature Healthcare's leadership was interested in pursuing energy efficiency solutions but had limited capital funding to address the needs of its facilities' outdated infrastructure. An opportunity came when a supplier partner approached Signature to participate in a guaranteed savings program to upgrade a 40-plus-year-old boiler and address several other energy efficiency needs.

Working with the supplier, Signature Healthcare conducted a 120-day assessment that identified several energy-efficiency improvements throughout the system, which encompasses seven locations, including the 124-year-old Brockton (Mass.) Hospital. The assessment also provided health system leadership and the board with details about the age of the facilities' systems, including which ones were beyond life expectancy, were no longer supported by their manufacturers, or did not meet revised codes and standards. Using this information to form their decision-making process, system leadership approved entering into a 12-year contract with the supplier that focused on several key initiatives (see "Key Energy Improvements" on Page 35).

Significant Savings

Signature Healthcare's plan to reduce energy consumption and reduce overall costs has resulted in significant benefits to patients and staff. In addition to making patients more comfortable throughout the facilities, installation of newer, more reliable equipment will help eliminate vulnerabilities associated with equipment downtime or failures.

The improvements are projected to result in substantial financial savings as well. The health system estimates that the savings will pay for the $9 million expense of installing the new equipment and systems. In addition, the supplier has guaranteed that savings. For example, if the savings are projected to be $400,000 per year but the actual savings are only $380,000, the supplier will pay Signature Healthcare the difference. Overall, by May 2020, when the initiatives have been in place for a full year, the health system is projected to achieve more than $380,000 in operational savings and more than $470,000 in energy savings for the first year.

In addition to financial savings, the energy efficiency measures implemented will greatly reduce the health system's annual greenhouse gas emissions, with a projected 22% reduction of electricity use and natural gas reduction of 24%.

Lessons Learned

There have been several lessons learned by the health system's leadership:

Plan for the unexpected. When upgrading old equipment and infrastructure, organizations often discover other, related upgrades that need to be made. When Signature

Healthcare updated its boilers, it discovered the electrical panel that supported its old boiler room would not support the newly improved one. The health system had to invest an additional $80,000 to upgrade the electrical system.

Have a well-defined schedule. Installing the new equipment took place during two phases and required a great deal of coordination. First, a temporary boiler system had to be connected to the building during the removal of the old plant and the construction of the new plant. Upon completion and testing of the new plant, the connection was made from the temporary boiler to the boiler's plant. With so many steps involved with both phases, the project schedule had to be well-defined. Among the many schedule considerations, Signature's leadership had to take into account: the date for new equipment delivery; a date for temporary boiler connections; duration of the demolition of the original system; duration of the new system installation; and consideration for time of the year, with particular regard for weather conditions. Leaders should keep in mind that projects such as these could potentially affect an organization's fiscal budget for two years.

Involve end users in planning and design. After the new equipment is installed, it is the mechanical engineers and other related staff who will be charged with operating the new equipment throughout the facility. It is crucial to seek input from the staff initially, during and after any improvement projects. The end users can predict whether a certain design will help—or hinder—their work.

Finally, leaders must create a culture of communication and caring, and build positive working relationships with the staff whose work is affected by major projects. Everyone feels better about their work when they have buy-in and understand the goals of new organizational initiatives. And that pride shows in the day-to-day operations of facilities old or new. ▲

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Key Energy Improvements

Working with a supplier through a guaranteed savings program, in 2018, Signature Healthcare embarked on several solutions to improve energy efficiency. The updates included:

Installation of five new 8.5-horsepower high-efficiency, high-pressure boilers that replaced boilers that were over 30 years old. The boilers are primarily used in the sterilization process of surgical and other instruments, and the new ones were relocated closer so that less steam was lost. The health system also installed three new low-pressure, 250-horsepower boilers, used for heating and hot water, which replaced older 500- and 300-horsepower boilers.

Automation of the health system's infrastructure. The boilers were placed on electronic controls, which eliminated the need to have full-time standing engineers watching the boilers (licensed boiler operators mandated by state and county regulatory agencies to be present 24/7, 365 days per year). The health system estimates it will save close to $400,000 annually due to this automation and elimination of wages paid to full-time engineers.

Reduced water use, including installing flushometers in all urinals and toilets at the hospital and in all off-site locations.

Updated lighting system, including changing all lamps throughout the hospital and in the parking lots to LEDs from traditional incandescent lightbulbs. Newly installed lamps are warrantied for up to 10 years, resulting in energy and cost savings on labor, as the bulbs will not have to be changed as frequently.

Upgraded HVAC system, including improved temperature and humidity controls in operating rooms.

Installation of a cogeneration unit in the hospital. This type of generator runs on natural gas, which is clean burning. It generates electricity for the building and produces hot water, which helps reduce wear and tear on the boilers.