

SMART STRATEGY: REGIONS HOSPITAL SUSTAINABILITY TEAM SLASHES \$1.17 MILLION IN ENERGY COSTS

CASE STUDY
MINNESOTA



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Don Abbott,
Director of Maintenance
and Engineering

Finding ways to save

Patient care is the focal point of all decisions made at a hospital, so when the maintenance staff at Regions Hospital in St. Paul was looking at operating more efficiently to save energy and money, they kept the patients in mind every step of the way.

Established in 1872, Regions Hospital is a private, non-profit organization, providing health care services in St. Paul and its surrounding communities, as well as for patients who come from throughout Minnesota, western Wisconsin and other Midwestern states.

“We operate 24 hours a day, seven days a week, but there are still things we can do to save money,” says Don Abbott, Director of Maintenance and Engineering.

With that in mind, Abbott and his team started to prioritize which efficiency projects they would work on first.

A team approach

They began by building an energy management team in 2009, consisting of electricians, automation experts and a chief engineer. They joined an existing sustainability team, which was primarily focused on environmental stewardship. The addition of energy efficiency was a natural fit.

“I give our leadership a lot of credit for inviting us to the table right away,” says Abbott. “They trusted our decisions which helped us focus on getting things right.”

They called Xcel Energy to help create the priority list.

“They were highly motivated from the beginning,” says Scott Kurtz, Xcel Energy account manager. “We meet once a month, and I’m always impressed at how aggressive they want to be in saving energy.”

The sustainability team started by installing occupancy sensors for both HVAC and lighting controls all over the building, which Abbott refers to as low-hanging fruit. The building was constructed in 1964, leaving a lot of room for improvement.

ENERGY EFFICIENCY SNAPSHOT

- Energy conservation projects at Regions have saved an estimated \$1.17 million on energy costs from 2009 to 2013, with more than \$400,000 in rebates received in this same time frame.
- Regions decreased its Energy Use Intensity (EUI) from 2012 to 2013 by more than 3.5 percent, a true indicator that the energy efficiency initiatives have been successful. The EUI expresses a building’s energy use as a function of its size or other characteristics.
- Regions saved almost 4,500 tons of CO₂ during this timeframe. The equivalent of taking 940 cars off the road, or enough energy to power 614 homes.*
- Regions saves 3,000 to 4,000 gallons of water each day after converting shower heads in the patient care area to low flow models.

*Calculations according to the EPA’s Greenhouse Gas Equivalencies Calculator.

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Other, more daring lighting improvements came next. Regions was one of the first hospitals in the country to convert all of its operating rooms to LED lighting. With that finished, they went outside, converting parking ramps and other exterior lighting to 80 percent LED and other high-efficiency options.

“We measured the energy use before and after switching out the parking lot lamps,” says Abbott. “In that one area from that one project, we cut 50 percent to 60 percent of our energy use. We also spend less time and money on maintenance now because LEDs last longer.”

More savings

The heating and cooling system came next. Xcel Energy’s Recommissioning study revealed that some of the systems weren’t functioning properly, so the team developed a plan to get the boilers and air quality systems working properly.

“We couldn’t regulate everything on a broad scale as we had done in the past because we needed to give staff and patients control at the room level,” says Tony Mies, the building automation manager. “Now we have temporary occupancy controls which are great for two reasons: people can make adjustments in the room, and it involves them in the energy reduction process.”

Other parts of the plan included a computer-based building control system to manage constant monitoring, built-in redundancy and a warning system.

The team went above and beyond a standard efficiency controls project by choosing to add an extensive electrical sub meter monitoring system that communicates directly with the building automation system. This combination is expected to provide next-generation insights into energy efficiency as well as other operational insights.

“We currently monitor more than 50,000 points and can actually see a problem before it happens,” says Mies.

In all, Abbott and his team worked on the following projects within a five-year timeframe:

- **Recommissioning study**
- **Heating:** boilers, steam traps, pipe insulation, tank insulation
- **Cooling:** chillers
- **Motors:** VFDs, pumps, new motors
- **Efficiency Controls:** several buildings installed sophisticated building automation systems
- **Computer Efficiency:** replaced a total of 389 desktop computers with virtual desktop infrastructure
- **Custom:** O2 trim controls on boilers and reverse osmosis water filtration system
- **Lighting:** LEDs in operating rooms, LEDs and other high-efficiency lighting in parking ramps and exterior lots
- **Energy Design Assistance:** efficiency built into new construction projects

Though they’ve completed many projects, the team still has to work within a budget. They invite contractors to think of ways to operate more efficiently, too, and reward them for their efforts.

“One idea that we employ is to use the chilled water return to pre-heat the outdoor air,” says Josh Knoll, Chief Engineer. “We save energy on both the heating side and the cooling side because we’re not using equipment to cool or preheat the air.”



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Worth the effort

All of the team's efforts have paid off. In five years, Regions has realized energy savings of over \$1.17 million and has received more than \$400,000 in Xcel Energy rebates. Using the EPA's Greenhouse Gas Equivalencies Calculator, the cumulative amount of energy saved is the equivalent of taking 940 cars off the road.

"We're trying to make everything more reliable and more efficient while maintaining patient comfort," says Josh Knoll, Chief Engineer.

In the process, they've won a variety of awards. Regions was named Xcel Energy's Energy Efficiency Partner for several years running, and received the Top 25 Environmental Excellence Award in North America, from Practice GreenHealth.

"We're very proud," says Abbott, "but we're not done yet."

Next steps

Some of the hospital's computer-based control systems are 15 years old, making them legacy products by industry standards and prime targets for replacement. Meeting regularly with Xcel Energy will help Regions identify smart efficiency prescriptions for the future.

"You don't have to invest millions of dollars on new equipment to operate more efficiently," says Kurtz. "If you take what you've got and make it better, you can receive rebate dollars. That's much more attractive than scrapping equipment and starting over."

"Now we can take savings from past projects, retrofit the equipment and continue to reap savings for years to come," says Abbott.



For more information about Xcel Energy rebates and energy efficiency programs, contact your Xcel Energy account manager or an energy efficiency specialist at the Business Solutions Center at **855.839.8862** or **energyefficiency@xcelenergy.com**. You can also visit **xcelenergy.com/Business**.

