

# THE Value Initiative

## Members in Action: Implementing Operational Solutions

### **Russell Regional Hospital – Russell, KS** *Achievement of ENERGY STAR® 100*

In the *Members in Action* series, AHA will highlight how hospitals and health systems are implementing new value-based strategies to improve health care affordability. This includes work to redesign the delivery system, manage risk and new payment models, improve quality and outcomes and implement operational solutions.

#### **Overview**

**Russell (KS) Regional Hospital (RRH), a critical access hospital, was already a leader in hospital energy performance when it embarked on a journey to make additional improvements.** RRH's goal was to make strategic energy-related investments that would reduce operating expenses while increasing system reliability. Now they have an ENERGY STAR® 100 rating.

The 1 – 100 ENERGY STAR score is a screening tool that helps assess a building's energy performance and compares it with similar buildings nationwide. Developed by the Environmental Protection Agency and stakeholders, the tool helps identify which areas to target for improvement or recognition. A score of 50 is the median: If a building scores below 50, it means it's performing worse than 50 percent of similar buildings nationwide, while a score above 50 means it's performing better than 50 percent of its peers. A score of 75 or higher means it's a top performer and may be eligible for ENERGY STAR certification.

The RRH maintenance team started by implementing strategies to reduce energy in-house. They started with the small things first, because it would result in savings that could be used for larger initiatives. For example, they initially focused on:

- Behavioral changes – RRH started checking lights to make sure they were not left on unnecessarily. They also started dialing back steam pressure when it did not need to be high and dialing back temperatures where possible.
- Occupancy sensors – When light switches needed replacing, the team replaced them with occupancy sensor switches instead. The switches were replaced slowly, a

#### **Impact**

**RRH has an energy score of 100, which means that it performs better than all of its peer facilities.** The facility reduced energy use by a spectacular 43 percent between 2013 and 2016. The energy services company measured and verified the savings as part of their work. RRH's maintenance staff independently verified the savings with ENERGY STAR Portfolio Manager®.

The lowest cost projects with the quickest returns on investment included replacing T12 and older T8 fluorescent lighting with energy-efficient T8 lamps (4.5 years to recoup costs), installing variable-speed pumping (3.8 years to recoup costs), and replacing condensing units (5.0 years to recoup costs). The most expensive projects, with the longest time frames to recoup costs, were the chiller replacements (15.2 years on a more than \$300,000 investment) and the boiler replacements (4.3 years on a nearly \$475,000 investment). In total, projected savings are more than \$120,000 annually. So far, the savings predicted have been verified as above the guaranteed savings value. The hospital replaced old equipment, improved patient comfort and safety, and reduced operating expenses.

switch or two per month. This strategy fit easily into the budget, and the savings added up.

- Lighting upgrades – The team also started upgrading T12 to T8 bulbs. Following the same pattern as the occupancy sensors, they upgraded a few each month so that the funds came out of the operational budget.



***Russell Regional Hospital***

- Maintenance – When the maintenance team received complaints about temperature, the team investigated and found equipment that was not functioning properly. The team took steps to understand the design intent and make the equipment function properly. This helped eliminate space heaters from the building.
- Information sharing – Through an in-house newsletter, Director of Plant Operations Steve Adams shares information with all hospital staff about the maintenance team’s efforts. Other areas in the hospital are embracing the idea of sustainability inherent in energy reduction. For example, in the cafeteria, they now encourage using reusable cups instead of Styrofoam®.

RRH administration entered a contract with an energy services company (ESCO). An ESCO can also be thought of as a design-build contractor that focuses on energy and cost reduction. The projects can often be self-funded through the energy savings and utility incentives without requiring capital from the facility. An ESCO can structure financing for energy projects in several ways. In RRH’s case, the ESCO performed the following steps:

1. Identified a list of energy-efficiency and cost-reduction measures based on the hospital’s goals and allocated capital;
2. Provided project pre- and post-measurement and verification that would serve as the baseline for energy savings;
3. Constructed and implemented the identified energy-efficiency and cost-reduction measures that the hospital decided to pursue; and
4. Provided a 10-year savings guarantee.

RRH was then able to complete several projects with the ESCO, including:

- Lighting improvements – New energy-efficient lamps, ballasts, and fixtures were installed throughout the building. T12s and older T8 florescent lighting were replaced with energy efficient T8 lamps and ballasts. Incandescent, fluorescent and, in some cases, even compact fluorescent lights were upgraded to more efficient varieties.
- Energy management system (building management system) upgrades – The project included improvements to the building management system. These included occupancy schedules, set point modifications, optimizing startup and shutdown, and providing additional helpful graphics including the ability to easily run override reports.
- Water-side economizer – The facility made changes in how it operated to take advantage of free cooling whenever possible; for example, cooling in the winter without running the chillers. To accomplish this, a heat exchanger was installed to allow cold condenser water from the cooling towers to cool the primary chilled water loop without running the chillers.

- Boiler replacement – The facility had inefficient steam boilers. The steam boilers were replaced with two new condensing hot water boilers. Associated equipment was converted to operate off of hot water instead of steam.
- Chiller replacement – The previous chiller was unreliable and at the end of its useful life. The chiller was replaced with a new water-cooled chiller.

### **Lessons Learned**

**RRH went from good to great in hospital energy efficiency by focusing beyond energy and taking advantage of its situation.** The hospital had a motivated maintenance team, equipment nearing the end of its useful life, a new director of plant operations, and a CEO who had experience with using energy projects to drive overall hospital priorities. RRH aligned these forces to achieve unrivaled energy performance.

### **Future Goals**

**RRH will continue to sustain the gains they have made.** The plant operations team will continue to look for ways to reduce consumption and make even more strides in energy efficiency.



***From left to right, Steve Adams and Tim Howard monitor water quality in the newly installed evaporative cooling tower.***

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