

Case Study

I n E x c e l l e n c e

One in a series from the Automated Energy, Inc. Library

CRESCENT SCHOOL CUTS ENERGY 30% *Energy Information Service Verifies Savings, Helps Manage Consumption*



Gary L. Beathard, superintendent of the Crescent Public School System near Oklahoma City, Oklahoma, said, "It's worth a call to have someone look at your facilities to determine if...and how much...energy might be saved and present the cost benefit to your board."

The Challenge

A school district in Oklahoma needed to upgrade its infrastructure, but there wasn't enough money for meaningful capital improvements.

The Solution

Energy consultants predicted that new equipment could reduce the district's energy consumption enough to pay for the upgrade. Annual energy use dropped from 91,800 kWh to 64,000 kWh. Lighting and half of the district's air conditioners have been replaced.

It's an increasingly familiar story in school districts across the country.

The Crescent Public School System 33 miles north of Oklahoma City, Okla., seemed to be between a rock and a hard place. High energy and maintenance costs for outdated and inefficient HVAC equipment and lighting, and the specter of rising utility rates threatened already tight budgets.

But unlike other school systems, the school board and Superintendent Gary L. Beathard succeeded in giving the school financial breathing room by replacing

Abstract

A 600-student school district with 1970s-era buildings overcame burdensome maintenance and energy costs by replacing outdated air conditioning equipment and lighting, and using an energy information service to quantify actual savings. To pay for the upgrade, the school board and the school superintendent decided on a lease purchase agreement that accommodated the school's tight budget. In addition to saving energy and reducing maintenance, the school district is better managing its overall energy consumption.

equipment and significantly reducing the school's energy consumption in only one year by 30 percent. The process the board and Beathard worked through to achieve that success could be applied by other districts coast to coast, especially by districts in areas with high utility rates.

The system of 610 elementary, middle school and high school students was built in the 1970s. Air conditioning units were at least 20 to 25 years old and the light fixtures were original.

"It seemed a maintenance crew was at the school every week repairing one of the air conditioners," said Beathard. It was a problem that was only getting worse.

The school board and Beathard believed installing new equipment could pay for itself by cutting maintenance expenses and trimming utility bills, but they needed to be certain. The last thing they wanted was to invest in hardware and not see the savings materialize.

"This could be a double-edged sword," Beathard explained. "We wanted to invest in energy-efficient equipment, but not go broke in the process."

Beathard sought expert advice to minimize the risk for such a significant decision. An energy solutions company, Automated Energy of Oklahoma City, evaluated the school's situation. Beathard





The Crescent School uses an energy information service offered by Automated Energy, Inc. to prove savings to the board and the finance company and to justify equipment upgrades in other buildings in the district. The information also helps verify accuracy of utility bills and develops load profiles, or patterns of energy consumption.

had requested that they calculate conservative estimates for energy savings and recommend funding sources.

“I wanted a good handle on the minimum amount of savings so I could determine how many air conditioning units I could replace and still be able to make payments on them,” he said.

The company advised the board and Beathard that they could anticipate at least a 10 percent savings and it suggested a lease purchase plan. The board accepted the recommendations and instructed Beathard to initiate the work. The process to this point took about a month.

So far, the school has replaced one-half of the system’s 46 air conditioning units, including roof top and ground mounts. The SEER* (Seasonal Energy Efficiency Rating) for the new equipment is 12, compared with no rating for the outdated units. Lighting also has been revamped. New energy efficient fluorescent lamps and electronic ballasts contribute to total energy savings.

*The higher the SEER rating, the more cooling the system provides for each unit of electricity. A new unit could cut cooling bills from 16 to 40 percent.

Maintenance costs obviously have dropped dramatically, but the school also needed to track actual energy consumption to ensure it was realizing savings there as well. To track energy use month by month, the school uses Automated Energy’s Web-enabled energy information management service. It automatically reads the school’s existing meters via Internet connection and presents the information in an easy-to-read chart. The chart shows that from August of 2001 to August of 2002, the school’s energy consumption dropped from 91,800 kWh to 64,000 kWh, or 30 percent--three times the conservative estimate of 10 percent.

The Web-enabled energy information service reads the school’s meters and presents the data in a chart.”

Interestingly, the district’s utility rates for natural gas and electricity have increased since the school installed the new air conditioners and lighting. But because of the conservative estimate, the savings still cover equipment payments, although the pace of new installations has slowed.

“If we hadn’t installed the new equipment, the higher rates would have devastated us,” Beathard said. “We avoided that steep increase.”

Beathard uses this information to prove savings to the board and the finance company and to justify equipment upgrades in other buildings in the school district. The information also helps verify accuracy of utility bills and develops load profiles, or patterns of energy consumption, of specific buildings, such as the high school and cafetorium. Load profiles make possible a host of energy management strategies, such as aggregating energy consumption of multiple buildings to negotiate a better rate with the utility and avoiding setting new demand charges, which can account for up to 40 percent of a monthly energy bill.

The chart verifies that air conditioners and other equipment are off during school vacations.

By looking at the chart during spring break and other vacations, he can verify that air conditioners and other equipment are shut down. “With 66 employees, someone always seemed to forget to turn off equipment, but this reminds me to remind them,” Beathard said. “When everything is automated, no pun intended, I can make sure it’s shut off when it needs to be.”

The school also now is able to review its historical energy consumption patterns, which it can use to create “what if” scenarios to identify various utility rates and tariffs that might lower its energy costs.

Payback of the upgrade is 10 years.

Beathard’s advice to colleagues: “It’s worth a call to have someone look at your facilities to determine if...and how much...energy might be saved and present the cost benefit to your board.”

For more information on the Crescent School upgrade and how the district uses energy information to better manage its energy consumption, call Automated Energy at 405-601-7500.

