

## **(On) Going Green**

by Laura Helmke-Long

The nation's 17,450 K-12 school districts already spend more than \$5 billion annually on energy. Risking energy costs are impacting school operations across the country. Identifying ways to reduce energy consumption is quickly becoming a critical part of an effective management strategy for facility managers and administrators alike.

In response to this growing concern, the U.S. Environmental Protection Agency (EPA) ENERGY STAR® program is helping the nation's school districts to improve their energy efficiency. Primarily known for qualifying energy-efficient products like appliances and consumer electronics, ENERGY STAR began labeling energy-efficient schools in 2000. Last year, EPA challenged building operators to improve energy efficiency cost-effectively by 10 percent or more with the help of ENERGY STAR tools and resources.

Each year, school leaders throughout the country continue to strive towards meeting more aggressive efficiency goals, increasing facility upgrades, and setting higher goals for education about energy conservation.

There are currently 200 school districts partnering with ENERGY STAR, accounting for more than 800 million sq. ft. of school building space. The ENERGY STAR Challenge promotes three actions for improving building efficiency: 1) establish efficiency improvement goals, 2) measure how much energy buildings use, and 3) make cost-effective improvements.

Located east of Portland, the Gresham-Barlow School District in Oregon is one of the leading school districts in the nation in showing that responsible energy management through improved efficiency can not only help protect our environment but also improve the bottom line – freeing up dollars for students and educational programming.

Gresham-Barlow first began exploring ways to reduce energy and water consumption in 1998. The district immediately adopted a resource conservation management (RCM) plan to prioritize fiscal policies in an effort to increase efficiency and reduce utility bills in every building. As a result of their refocused energy-saving plan, district-wide implementation of utility management software, facility improvements, and changed student and staff behaviors, Gresham-Barlow's schools now use 40 percent less energy than the national average of K-12 school buildings. To date, the district has saved nearly \$5.2 million in utility costs. In fact, the 2004-2005 school year's \$1.2 million savings is equivalent to the salaries of approximately 22 full-time teaching positions.

Through their partnership with EPA and by meeting ENERGY STAR guidelines for energy management and building energy efficiency, Gresham-Barlow became the first school district in the nation to achieve a 30-point performance improvement score (as measured by EPA's 1-100 energy performance rating system) across its entire building portfolio, for an overall energy efficiency improvement of 46 percent.

This major achievement won the district national recognition as an ENERGY STAR Leader in 2005 and secured it as the only school district to become Partner of the Year in 2006.

### **Establish Efficiency Improvement Goals**

As the assistant director of facilities for Gresham-Barlow, Dave Cone played an instrumental role in developing a comprehensive strategy using ENERGY STAR resources and other energy conservation practices to improve the district's overall efficiency. Yet before any actual improvements could be made, Cone first enlisted the commitment and support of every major department in the district. He worked with staff and administrators to develop a shared goal and an extensive RCM program to reduce energy consumption in every building.

"A facilities department can't do it alone," said Cone. "You have to have the superintendent and other administrators, school board members, principals and support staff, teachers, custodial staff, technicians, and students endorsing the idea that we can and will save energy."

To establish energy efficiency as a district priority, the Gresham-Barlow School Board adopted a formal Energy Conservation and Resource Conservation Policy. The policy focused specifically upon conservation combined with education efforts, and made energy efficiency a joint responsibility of district employees and students.

### **Assess Building Energy Performance**

Following complete buy-in from high-level decision makers and all staff, Cone began to assess district-wide energy use patterns through meetings with school principals and head custodians while compiling data from four years of previous utility bills.

The generated data was input into an energy management software program developed by Save More Resources' (SMR) to analyze energy use information and accurately pinpoint areas for improvement. The District invested \$2,000 for the software and staff training sessions, allowing them to easily identify consumption anomalies and billing errors; identify trends; make accurate projections; and create sophisticated forecasts, budgets, and customized reports.

By monitoring energy consumption and utility costs through this centralized system, Cone and his facility management team began to understand and control each school building. With this unique knowledge, they have been able to identify, prevent, and respond to energy management issues faster than ever before, which has helped them achieve maximum energy performance.

Cone cites Hogan Cedars Elementary as a great example of Gresham-Barlow's new RCM program at work. In addition to using the district's energy management software, Cone also hired a contractor to conduct an HVAC audit at the new school to ensure that all the building's systems worked as the district had intended. The contractor discovered that several classrooms at Hogan Cedars were not properly balanced, which led to subsequent spikes in energy usage.

"We were shocked when Hogan Cedars had much higher than expected energy use the first few months it opened. It had all the new technology and was designed for energy efficiency.

### **Make Improvements**

Understanding and controlling each building in the Gresham-Barlow School District has ushered in a series of facility and equipment improvement projects along with the changed behaviors of students and staff. The district's RCM program even includes a built-in incentive program that awards individual schools additional activity dollars for their efforts to implement and enforce various ways for saving energy. Through these key improvements, Gresham-Barlow successfully reduced total energy consumption from 11MBtu per student in 1999 to 7MBtu per student in 2004, which is equivalent to nearly a 46 percent decrease in energy use.

In addition to using the no-cost ENERGY STAR tools and resources, Gresham-Barlow has clearly leveraged technology to guide their overall RCM program. Along with the energy management software, the district also uses an internal Website that monitors real-time energy usage of every building. This tool helps custodial staff at each school see what is going on in each building to make any localized adjustments in order to reduce energy costs. As a result of the technology-based reporting, Gresham-Barlow has been better equipped to determine where to spend renovation dollars to improve facilities and equipment at the schools. Improvement projects have included installing simple motion sensors to shut off lights in unoccupied rooms, pool cover for insulation heat, and additional complex direct digital controls (DDC) for more efficient HVAC systems. With additional funding from the State of Oregon's Senate bill 1149 and Business Energy Tax Credit Program, Cone was able to replace old systems with energy-efficient equipment, install new digital controls, and replace one-speed motors with variable-speed models.

Of course even with all the technology in place, Cone is quick to emphasize that the most essential aspect of any successful RCM program continues to be human involvement.

“Training people to conserve energy is a lot cheaper and more powerful than buying equipment,” said Cone.

Facility and maintenance personnel at the schools plans key roles on Cone’s RCM team, helping to maintain district efficiency goals by monitoring energy use daily, giving presentations to classes, and using students to help during energy audits. Through Cone’s leadership, the Gresham-Barlow School District has standardized temperature setting for every single classroom, which means that the heat only turns on when outside temperatures fall below 68 and the air conditioning until only turns on when it is at least 74. Accordingly, staff and students have been educated about the importance of energy conservation, as well as the steps they can each take to make a difference, like dressing appropriately for the season rather than needing to heat or cool outside of the temperature guidelines set. At Hollydale Elementary School, students were even given the responsibility of ticketing each other and staff members for not abiding by conservation pledges – the principal has been cited to the glee of some dedicated young conservationists. The district plans to place similar accountability programs at every school in the district.

As a part of the RCM education component, Gresham-Barlow has implemented a new program for students at its Center for Advanced Learning. The Student-to-Energy Tech (SET) program with the help of the energy consultant, New Energy Technology, involves high-performing students under teacher supervision in the day-to-day management of the school’s energy and water consumption. The school building has essentially become a lab for the students where they can experiment, learn, and take an active role in reducing the district’s energy consumption.

### **Take the ENERGY STAR Challenge**

After salaries, energy costs are the typical school district’s second largest operating expense. According to EPA, one-third of the energy goes to waste in a typical school. ENERGY STAR partnerships represent a commitment by high-level school officials to improve the energy efficiency of their districts and to educate students, staff, and the community about the resulting financial and environmental benefits. Currently school districts across the country have rated the energy performance of more than 11,000 buildings using EPA’s 1-100 energy performance rating system.

“Buildings cause about 17 percent of U.S. greenhouse gas emissions,” said Kathleen Hogan, director of EPA’s Climate Protection Partnerships Division, “ENERGY STAR partners such as the Gresham-Barlow School District are showing that their buildings can be effectively managed with great results for their energy bills and our environment.”

Gresham-Barlow is just one example of the many districts making a difference in the lives of their students and staff while helping to protect the environment. Today there are

now more than 16 ENERGY STAR Leader school districts across the US and more than 500 school buildings that have earned the ENERGY STAR label. Smaller districts like Gresham-Barlow and York County School Division, as well as larger ones like San Diego Unified School Districts, are all doing their part to meet the ENERGY STAR Challenge. Each year these leaders continue to strive towards meeting more aggressive efficiency goals, increasing facility upgrades, and setting higher goals for education about energy conservation.

Together we can all help to build a better world – 10 percent at a time. Take the ENERGY STAR Challenge this year and see the difference you can make in your world.

For more information on how school districts are saving energy and protecting the environment through EPA's ENERGY STAR program, visit [www.energystar.gov](http://www.energystar.gov).

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