

## Conserving Watts by Watching

*An Oregon school district dramatically cuts its energy costs by educating teachers and staff about effective utilities management*

**K**atie Litchfield and Reid Gammon, eighth-graders at Crossler Middle School in Salem, Ore., have a special duty on Wednesday mornings. They are Watt Watchers—a team of students who visit empty classrooms to make sure the lights are turned off.

If students see computer monitors or other electronic equipment has been left on, they leave a pink slip on the teacher's desk or on the classroom door. The slip says, "Oops! Did you forget?" and lists what was left on from the previous day. When everything is turned off, a green note is left that says: "Thank you for saving money and the environment." Both notes are signed, "The Watt Watchers."

"At first some of the teachers were kind of grumpy about us coming around, and now they aren't," Reid says. "Some teachers have made changes in how they do things with electricity in their classroom."

Thanks in part to the Watt Watchers' efforts, Crossler has reduced its energy usage by almost 10 percent over the past five years. Similar efforts in 51 other schools in the Salem-Keizer School District have helped us save money at a time when utility rates are skyrocketing.

These gentle reminders have helped energy awareness become routine for many students and teachers. As one teacher says, "Now my kids are

reminding me to turn off the lights when we're not in the room!"

### **Making conservation a priority**

With 38,961 students in 69 schools, Salem-Keizer is Oregon's second-largest school district. Like many districts, our utility rates have risen dramatically over the past five years. Electricity costs are up 50 percent, while natural gas rates are more than 80 percent higher.

After I became Salem-Keizer's superintendent in 2000, I talked to facilities director Ron DeWilde about the looming increases in utilities costs. Salem-Keizer started a utilities conservation program for custodians and maintenance staff in the early 1990s, but participation fell due to staff changes. I consulted with Salem-Keizer's school board, and we decided to revive and expand our existing program.

Before coming to Salem-Keizer, I served as superintendent and assistant superintendent in two districts—Newton, Kan., and Lee's Summit, Mo.—that had energy conservation programs with an education element and student-teacher participation. It was important that our program have participation from everyone—students, teachers, staff, and administrators. Our stated goals were to upgrade facilities, reduce energy costs, and promote bet-

ter use of energy resources.

In 2002, we created a full-time position for a licensed teacher to direct the student/teacher education and participation portions of the program. Kathleen Hill, an alternative education teacher from North Salem High School, used other districts' energy conservation programs to develop our Resource Efficiency Action Program (REAP).

REAP educates students and teachers about energy conservation issues and gets them involved in efforts to save energy at home and at school. Throughout the year, Kathleen travels around the district, presenting at assemblies and in classrooms on energy production, monitoring, and conservation.

Her lessons often include hands-on activities. For example, in a classroom presentation about alternative energy sources, Kathleen shows students how to make a solar oven using empty pizza boxes and aluminum foil. When students finish, they take the ovens outside and—assuming the sun is out—use them to cook S'mores.

Kathleen also works with businesses to allow students to participate in numerous energy conservation events. These events include:

■ **Salem Area Transit (Cherriots) Car-Free Day**—Middle and high school students participate in an annual day in which all Cherriots bus rides are fare free. The transit system gives participation and cash awards totaling \$10,000.

■ **Energy Awareness Day**—Held at the state capitol in Salem, this event features tours of the capitol building and exhibits on alternative energy sources for students in grades 4-12.

■ **The Water Festival**—Held at the Salem Conference Center, this event

sponsored by Salem Public Works features exhibits, educational games, and activities related to hydroelectric power, water conservation, and salmon conservation.

These events have a surprising effect in energizing students' interest about environmental subjects. Recently, Bethel Elementary hosted REAP's "Weird Science" Day, in which students were treated to special exhibits on watershed and energy conservation, recycling, and indoor air quality.

As buses loaded at the end of the day, students were still chatting with wild enthusiasm about the exhibits they had seen. One bus driver asked a teacher, "What did you do today? Feed them liquid sugar?"

"No," the teacher replied. "We fed them science."

### Improving utilities

Custodial and maintenance workers are essential parts of Salem-Keizer's program because of their hands-on role in building operations. As part of the program's revival, their responsibilities were further defined and made easier to understand.

The board amended our energy conservation policy "to embrace all utility resources and to declare the district's commitment to conserving those resources." Additionally, rules governing the policy now are much more specific and enforceable. Rules were amended to include specific temperature setpoints for heating and cooling, operating procedures for lighting and computers, and responsibilities for staff and departments.

In addition, Salem-Keizer hired the Portland branch of McKinstry Co., a mechanical construction contractor, to renovate the schools to be more energy efficient. Nearly every school has been renovated in some way. Renovations included:

■ **Windows**—Single-pane metal-frame windows were replaced with energy-efficient, high-performance windows, resulting in fewer hot and cold spots in classrooms as well as

improved noise reduction and better outside lighting.

■ **Lighting**—Metal-halide lighting with 400-watt bulbs was replaced with electricity-saving high-output T-5 fluorescent fixtures. Motion sensors now turn lighting off when gymnasiums are not occupied.

■ **Insulation**—Insulation was added to the attics of older schools to cut down on drafts and save heating costs.

■ **Boilers**—Mini-boilers were installed in some schools to generate hot water during warmer, nonheating months. Previously, these schools had to fire large boilers just to heat water—an inefficient use of natural gas in warm weather.

■ **Demand-Based Ventilation**—Controls were installed in ventilation systems to bring in fresh air from outside only when it is needed. The system does not have to run constantly to maintain indoor air quality in the building, further reducing costs.

It is important to note that these improvements were made without spending taxpayer money. Instead, they were financed by Oregon's SB-1149 Fund, which was created by legislation that deregulated the state's investor-owned electrical utilities. The legislation sets aside a percentage of utility gross revenues for public purposes, such as low-income weatherization and conservation projects. Ten percent of the funds are earmarked for energy-saving projects by public schools.

### Key to success

Cooperation by everyone is the key to our program's success. Kathleen Hill has worked closely with utilities coordinator David Furr to develop REAP. The two sides of the program—student/teacher participation and utilities management—work together and depend on each other. Each needs the other to be successful. David provides energy and utilities management expertise that Kathleen needs to make the program effective.

The two regularly examine utility bills to record each school's performance and changes in utilities use.

Kathleen also tracks student/teacher participation at each school to determine the program's success or failure.

REAP is voluntary, and not all schools participate. But we honor schools that do by providing incentives, such as an annual \$500 grant from the utilities department. Half of the money is paid at the beginning of the school year, after the schools have fulfilled preliminary utilities requirements.

Each school must complete a series of energy conservation benchmarks and tasks throughout the year. For example, Watt Watcher audits and reports must be done weekly or bi-weekly. Schools that complete benchmarks receive the second half of the grant in April.

In the past three years, student, teacher, and staff participation in energy conservation has saved \$400,000 annually from our \$5 million utility budget. We also are saving \$150,000 to \$175,000 annually thanks to McKinstry's utilities improvements.

The greatest difference, however, is the change in our students' attitudes. Thanks to our education and participation programs, they are developing energy conservation habits that we hope will last a lifetime.

"I used to leave lights on at home," says Tyler Roofener, a seventh-grade Watt Watcher at Parrish Middle School. "Now I turn off lights because I see how much it saves. I turn off my fish tank light at night, and I go through the house and turn things off before I go to bed. My mom usually leaves on the computer and my brother leaves on lights, so I turn those off as well."

We hope students will carry over into the community what they have learned, and we have seen evidence that REAP is working. Recently, when Kathleen Hill was at her doctor's office, a woman asked what she did for a living. When Kathleen told her, the woman said, "Oh, so you're the reason that my niece keeps telling me to turn out the lights!" ■

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Kay Baker (bakerkr@verizon.net) was superintendent of Salem-Keizer School District until her retirement in July 2006.