



Go Green to Save Green

What can schools do to save energy and money?

Each year, U.S. school districts spend over \$9 billion on energy. Lighting, heating, ventilating, preparing food, running office equipment, and air conditioning expenses all add up quickly when budgets are stretched thin and energy costs are on the rise.

The big question is: What can schools do to save energy? Here are a few suggestions that may help your district get a handle on rising energy costs and possibly save some programs or teaching positions.

Improve Maintenance and Operation Practices

One way to save energy, and therefore money, is to make sure buildings are properly maintained and are operated at maximum efficiency. If a district decides to scale back operations and maintenance to save money, it is likely they will spend more money on energy, labor, and equipment replacement in the long run.

From November 2004 to October 2005, County Line Elementary School in Germantown reduced energy costs by more than \$4,500 without upgrading or investing in a single piece of equipment. How was this school able to achieve such success? The answer is with a com-

mitted staff and the help of Focus on Energy, Wisconsin's energy efficiency and renewable energy initiative.

Two Focus on Energy resources helped the school save energy: the Commercial Practical Energy Management (CPEM) program and the Best Practices Preventative Maintenance program. The school district sent key employees to Focus-sponsored training sessions, which are held at locations throughout the state.

"CPEM helps you develop energy savings policies and allows you to take control of your utility usage," says John Berget, the Focus on Energy advisor who worked with County Line. "It also provides tools so you can inventory your equipment, and includes spreadsheets that let you calculate your savings from various equipment upgrades."

Based on suggestions from Focus on Energy, district utilities conservation guidelines were developed and County Line staff immediately put several of the no-cost measures into place.

Conduct an Energy Assessment

Sometimes buildings need to be thoroughly reviewed in order to pinpoint where the energy inefficiencies are.

With an energy assessment, Focus on Energy will share recommendations and potential cost savings for addressing inefficient energy systems.

In 2003, the Eau Claire Area School District made a commitment to energy management to be environmentally responsible, and most importantly, the dollar savings could be used in district classrooms and to purchase books for students. Focus on Energy conducted energy assessments for all of the district's facilities and recommended that the district hire an energy manager. They also recommended a list of energy efficiency actions that would reduce the district's energy costs and make its facilities more efficient and productive.

"After the energy audit was conducted, we realized how much money we were wasting by not implementing simple and effective energy efficiency improvements," says William Klaus, superintendent for the Eau Claire Area School District. "By making this commitment to energy management and identifying a dedicated energy manager, our schools use far less energy. Our energy costs have been reduced and our staff, students, and visitors are more comfortable and more productive."

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— William Klaus, superintendent, Eau Claire Area School District

Reduce Energy Demand

Take a close look at your energy bill. Does your school pay demand charges? If so, you could be wasting money by not managing your peak energy use.

Staff at the Green Bay Area Public School District realized that growing kilowatt (kW) consumption pushed them into a different — and more costly — rate class. Instead of giving in and paying more, they decided to make several smart “demand limiting” decisions to reduce kW usage.

Between 2003 and 2007, the Green Bay Area Public School District spent approximately \$300,000 on upgrading system controls, variable frequency drives, and incorporating other strategies to avoid customer demand and peak kW charges.

Through these and other related efforts during this time period, the Green Bay Area Public School District has saved more than \$1.5 million. It is also believed that due to the ever rising cost of electricity, the district will luxuriate in literally millions of dollars of savings throughout the engineering life cycle of these enchantments.

Ensure the Right Level of Lighting is Used

Lighting is often the largest electrical energy user in a school building. Conduct light level surveys of each facility to determine what areas are properly lit and what are either over- or under-lit.

If possible:

- Reduce lighting in over-lit areas to reduce kilowatt demand and save money.
- Replace high intensity discharge (HID) fixtures with high efficiency fluorescent fixtures.
- Remove bulbs that light the front display panel on vending machines.
- Replace all old exit signs with light emitting diode (LED) units.
- Encourage building occupants to turn lights off when not in use.



Luck School District staff get a hands-on education of their school's facilities during the energy audit of a KEEP School Building Energy Efficiency Education course.

In 2008, the East Troy Community School District replaced 234 inefficient T12 fluorescent bulbs with High Performance T8s, changed out 65 inefficient/exterior lighting units with LED wall packs, and replaced 48 incandescent light bulbs with compact fluorescent light bulbs to save approximately \$1,700 annually. The payback for the lighting projects is an estimated 1.4 years.

Manage Heating and Air Conditioning Systems More Effectively

Along with lighting, a school's HVAC system is another major energy user. Adjusting air handling equipment to reflect the building occupancy level can save a significant amount of energy.

The following action should be taken every year, at a minimum:

- Fine tune the heating and air conditioning equipment controls.
- Tune up boilers to run efficiently.
- Install tabulators in several boilers.
- Reduce temperature set points to save heating costs.
- Increase temperature set points to save air conditioning costs.

In 2007, Waupun High School worked with Don Keck, Focus on Energy advisor, to identify how their

HVAC system could save their district \$130,000 annually. Their existing systems programming did not allow the building maintenance personnel to enter schedules for the HVAC equipment.

By setting occupied and unoccupied schedules, the building will use substantially less energy because there will be far less ventilation air being brought in during the unoccupied hours, which requires energy to heat and cool. The HVAC fans will also use less energy because they will run less during the unoccupied mode. The school district was unaware that this feature was available to them.

Turn Off Computers

Although the amount of electricity wasted by a single computer may be insignificant—typically around \$20 annually — the sum of wasted electricity by computers throughout a school district can amount to hundreds or thousands of dollars. In addition to the direct energy savings, computer labs often overheat. Turning off computers, lights, and monitors when they're not in use reduces the number of comfort complaints and air conditioning costs.

Turning off computer monitors when you know you will be away from your computer for more than a





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few minutes will save energy even if you do not shut the computer down. Note: screen savers do not save energy — it generally takes as much energy to move that fish around the screen as it does to write an email.

The Eau Claire Area School District’s information technology department found out that turning off the district’s computers during evenings, weekends, holidays, and summer vacation can save the district an estimated \$50,000 a year.

Support Energy Education Efforts

The Wisconsin K-12 Energy Education Program (KEEP) university-credited inservice course, School Building Energy Efficiency Education, informs teachers about the Focus on Energy Schools Program and encourages participation in energy saving activities in their school.

The course, in part, consists of a school energy audit, interpreting school energy bills, and a background of energy use and conservation strategies for the district. As an assignment, teachers are encouraged to write an Energy Action Plan outlining how they (and their students) will help reduce energy consumption and educate the staff and students about energy use in their school.

Facilities personnel find that teachers are more willing to cooperate with energy efficiency initiatives when they understand how the energy systems in a school building actually work.

“We believe that the education of our district staff as well our student body is key to a successful energy conservation program,” says Robert Fuhr, executive director of facilities and related services for the Green Bay Area Public School District. “Once the stakeholders become aware of the cost avoidance savings and how those savings can be reinvested in educational programs and through the hiring of additional teaching staff they become staunch supporters of our energy conservation efforts,”



Educators within the Fond du Lac school district work on their energy action plans during a KEEP school building course

If you are interested in more information or would like to schedule a KEEP School Building Energy Efficiency course in your district, contact Melissa Rickert at 715-346-4320 or mrickett@uwsp.edu.

Form an Energy Committee

Tackling the issue of saving energy in a school or an entire district can feel like a daunting task, often left up to the facilities manager and their staff. One way to encourage participation in energy conservation and efficiency initiatives is to involve a wide variety of people from the beginning.

A good place to start is by forming a district-wide energy committee including the following people:

- Focus energy advisor;
- Utility representative;
- Facilities manager;
- School board member;
- District administrator;
- Principal;
- Business official;
- Curriculum coordinator;
- Food service representative;

- Teachers representing different grade levels;
- Other motivated leaders in the school community.

Once your energy committee is formed, you can move forward as a team to tackle that question: What can schools do to save energy? ■

Rickert is an outreach specialist with WI K-12 Energy Education Program (KEEP). KEEP is the result of a collaborative effort between the Wisconsin Center for Environmental Education (WCEE) and Wisconsin’s Focus on Energy program, the statewide energy efficiency and renewable energy initiative. The WCEE is a nonprofit organization, located in the College of Natural Resources at the University of Wisconsin - Stevens Point, which works to improve environmental education throughout Wisconsin.

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