

Powerline

Madison West Hosts Recent KEEP Teacher Workshop



Teachers in the Madison Metropolitan School District (MMSD) are busy learning about how school buildings use energy and how staff and students can increase energy savings. Ten area teachers recently completed the 16-hour KEEP (K-12 Energy Education Program) Building Energy Efficiency course sponsored by Focus on Energy and taught by Jim Jenson, MGE Community Education Manager and KEEP Adjunct Faculty member.

As part of the course, teachers completed a building energy audit of West High school led by Glenn Bolt of McKinstry, an energy services provider, and Jennifer Everhart, a Focus on Energy energy auditor. Teachers discovered how many common-use areas (including the library/LMC area, hallways, classrooms and large group areas) are typically over lit. Lighting typically accounts for about 14% of electrical energy use in school buildings. In MMSD, lighting costs the district about \$1.7 million per year (see Did You Know facts). Although the district has replaced many older fluorescent tube fixtures with high-efficiency T-8 energy-efficient

lamps, closer attention to scheduled lighting, use of motion detectors and basic turning lights off when not needed can save significantly on lighting costs in most schools.

Schools must be able to provide minimum lighting intensity levels for specific areas like classrooms, hallways, gymnasiums and office areas; however, there are times during the school day that teachers and staff can reduce the amount of lighting they need based on available daylight or activity level in a given area and not sacrifice safety or eyestrain.

In addition to lighting, the building audit included a visit to the Tech Ed. Dept., auditorium, gymnasium, boiler room and typical classrooms, each with its unique opportunities for energy savings.

The new MMSD Energy Policy includes a multiyear contract with McKinstry to help identify energy-saving opportunities and promote behavioral change in the schools through its partnership with the People Power Planet (PPP) program, promoted by Sustain Dane. PPP is working to identify “Energy Champions” or staff who are willing to champion the energy conservation cause in their school.

Over the last five years, the statewide KEEP has conducted workshops at a variety of schools for teachers to learn how school buildings use energy and ways they can incorporate energy conservation and efficient building practices into their curriculum. The workshop included sessions on reading and interpreting school energy bills, KEEP classroom activities, a tour of the MGE West Campus Cogeneration Facility and a pre-

(See Teacher Workshop, next page.)

Teacher Workshop *(continued from front page)*

resentation by Manus McDevitt, Sustainable Engineering Group LLC, on geothermal heating and cooling systems for schools. Dan Werner, DNR Green and Healthy Schools Coordinator, discussed the DNR's school certification program.

For more information on KEEP workshops and to find additional energy education resources for your classroom, visit www.uwsp.edu/cnr/wcee/keep.

If you teach in the MMSD and want to participate in the PPP program, contact Julie Jarvis, Sustain Dane, at 608-819-0689 or email julie@sustaindane.org.

Did You Know

In 2010, the Madison Metropolitan School District (MMSD) spent \$4,537,150 on natural gas and electricity costs.

- Electricity accounted for \$2.8 million.
- Lighting costs were \$1.7 million.

MMSD will save about \$70,000 per year if lighting is reduced by 5%.

- Incandescent lightbulbs are very inefficient—only 10% of the energy required to operate the bulb is converted to light; the rest is converted to heat!
- Converting five 75-watt incandescent lightbulbs to 22-watt compact fluorescent bulbs saves about 860 pounds of carbon dioxide over the life of the bulbs and about \$50 in operating cost.

What can students and staff do?

- Turn off unneeded lights in classrooms.
- Check with custodians and determine if incandescent lights can be converted to compact fluorescent or LED (light-emitting diode) bulbs.
- Educate students and staff about lighting efficiency.
- Form an energy patrol in your school and monitor classrooms for wasted energy.
- Borrow a personal energy meter from the public library and measure how much electricity your small appliances use. Remove unnecessary appliances.
- Identify an “Energy Champion” in your school. An Energy Champion is an adult staff member who can champion energy conservation/efficiency in your school.

Solar in Schools Partnership Marks Anniversary

September 2011 marked the 10-year anniversary of MGE's first solar electric generating system installed on area high schools. MGE installed and maintains rooftop solar electric photovoltaic (PV) panels on 10 area high schools. All five of Madison's public high schools are participating along with Middleton High School, Middleton Alternative Senior High, Monona Grove, Abundant Life Christian School and Edgewood High School. The PV systems provide valuable data for students and teachers to learn about renewable energy technology performance and environmental benefits of clean energy. The solar electric systems were not designed to save on electricity bills but more for educational/technology demonstration purposes.

Solar in Schools was funded by a gift from MGE to area schools to demonstrate local renewable energy technology that can be monitored and then used in the classroom to evaluate performance, efficiency and historical data. A web-based monitoring system and weather station were installed with each system



allowing students to observe real-time hourly, weekly, monthly and annual electricity production including environmental savings.

You can find more information on the partnership, download the curriculum and find real-time energy production for each school by visiting mge.com/solarschools.

Do You Own an Electric Vehicle?



MGE is studying in-home and public charging stations for electric vehicles (EV). Do you or someone you know own an EV, live in the MGE electric service area and want to participate in an EV study? As part of the study, MGE is interested in how customers use the public charging stations, how reliable the stations are, how they charge their cars at home, when they charge, how long it takes, how it impacts our electric system and how much power it uses. These are just some of the questions we hope to answer as we begin to learn how increased sales of EVs will ultimately affect the electric utility system. MGE will install up to 25 home electric meters (separate from their home electric meters) to study how EV owners charge their cars at home.

MGE will install up to 24 charging stations at 16 area locations around Madison. To see a map of the charging stations, visit mge.com/evstations.

To participate in the program, contact MGE at 608-252-7117 or visit: mge.com/evstudy.

New Loaned Resources for Your Classroom

MGE has a new Solar Sun Oven and Pedal Power Bicycle that teachers can borrow for use in their classrooms. The Solar Sun Oven is a great way to demonstrate the power of the sun for cooking and preparing meals without gas, electricity or solid fuel. Given the right conditions, the oven can reach over 350°F and cook a variety of foods including bread, muffins, rice, dry fruit and meat. Try delicious recipes like baked carrot cake, brownies and fresh bread. The oven is a great way to demonstrate how easy it is to cook with the sun. The oven is easy and quick to set up and take down. Cookware is provided. You provide the ingredients and hot pads. Caution: HOT! ☺



The Pedal Power Bicycle is a popular hands-on legs-on tool for teaching a variety of energy-related concepts in your classroom including electricity production, energy conversions, renewable energy, energy efficiency, electrical resistance, circuit breakers, switches and the relationship between voltage, amperage and watts. Two different sized bicycles for elementary students and adults are available to use with the Pedal Power demonstration. Requires a brief 20- to 30-minute training session/setup in your classroom prior to use. A teacher's guide is available with background information and suggested lesson plans for you to use.

Energy Skillbuilders Available in 2011-2012

K-6 teachers in the MGE service area can choose from five different classroom learning modules on the topics of electric and gas safety, energy conservation/efficiency, renewable energy and basic electricity. Each title is available in class sets of 25 student copies and a teacher's guide.

Title	Grade and Subject
<i>Mouse House Surprise</i> (safety; includes teacher BigBook)	K-2 (reading)
<i>The TreeHouse Team Saves the Forest</i> (home energy efficiency awareness)	2-4 (conservation)
<i>Safe at Home: Leo Learns about Natural Gas and Gas Safety</i>	4-6 (science and math)
<i>Paths for Electricity</i> (includes experiment pack)	4-6 (electricity)
<i>Electricity from Wind, Water & Sunlight</i> (includes kit with PV cell)	4-6 (renewable)



Typically, these publications can be taught in one to five periods, depending on which activities the teacher selects. They correlate with national and state language arts and science standards, help develop critical thinking skills, incorporate hands-on science activities and support thematic, interdisciplinary units. Your students will find them fun and challenging.

To preview the materials or order them, visit www.enterpriseforeducation.com/mge.html.

Put the MaGicEnergy in Your School

If you are looking for a great way to kick off your elementary/middle school energy program or want a stand-alone energy/environmental program performed, consider scheduling MGE's MaGicEnergy large-group program for your students. This program is provided free to area schools and community groups that want to teach energy and environmental sustainability concepts in a fun, interactive and fast-paced format. Local entertainer, author, educator and speaker Bob Kann performs MaGicEnergy for MGE.

MaGicEnergy was developed in 2006 and revised in 2008. A Leader's Guide including lesson plans and Spanish script is available for pre-program or post-program activities.

To schedule a performance for your school, contact Jim Jenson at 608-252-7091 or email jjenson@mge.com.



If you have any questions about MGE education services or want to request energy education materials, contact Jim Jenson, editor, at (608) 252-7091 or email jjenson@mge.com.