

BULLETIN

The energy and planning resource for Western utilities

EKALAKA FIFTH GRADERS SCORE AGAIN IN ENERGY-EFFICIENCY COMPETITION

Southeast Electric Cooperative and Ekalaka Elementary School students teamed up to take another run at America’s Home Energy Challenge, and once again proved that ordinary households can find ways to save energy, even during a hard Montana winter.

The fifth-grade class tied for second place with four other teams from around the nation by reducing their collective home energy use .616 percent in September, October and November of 2013, compared to the same three months in 2012. If that achievement didn’t quite reach the heights of 2011, when the school district took the top national prize of \$15,000, it was still impressive, noted Southeast Member Services Representative Marlene Waterland. “Our goal was to save 3 percent over the previous year, but the winter was so cold, we were lucky to show any savings at all,” she said.

SECRET IS TRAINING

Waterland, who coordinated the utility’s support of both competitions, worked with teacher Barbara Elmore to

organize this year’s game plan.

Before the 10 participating students started the competition, they had to learn a little about electricity. The class studied electricity vocabulary words and reviewed a pie chart on energy use. Elmore taught them how to calculate kilowatt-hours (kWh) for routine home activities like cooking, doing laundry or watching TV. “Getting kids to see how they can apply math to everyday problems is a valuable takeaway from the Challenge,” Waterland said.

Waterland supplied fact sheets on insulation and fuel cost comparison for options like propane, electricity, wood and coal. Students received copies of Touchstone Energy’s 101 Easy Ways to Save Energy and Money and compared appliance energy use with Waterland. “When homeowners are ready to replace an old appliance, it helps if their children, and not just their utility, are talking about Energy Star,” she observed.



With an infrared camera borrowed from Western’s Equipment Loan Program, Ekalaka fifth-grader Jared Pardee tracks down energy leaks in his kitchen. His family led the class team to its second-place victory in America’s Home Energy Challenge for 2014. (Photo by Southeast Electric Cooperative)

COLLECTING DATA, CALCULATING USE

As part of the educational process, participating families got a home energy audit, courtesy of Southeast. “Marlene borrowed the FLIR EX320 infrared camera,” said Equipment Loan Manager Gary Hoffmann. “It’s good for

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home inspections because it is one of our easiest to use models—you point it at the target like a flashlight—and it still gives you a high-quality picture.”

Waterland used the camera to find leaks in ductwork, windows and doors; and to show heat loss around furnaces, hot water heaters and other appliances. The audit also included comparing the home electrical use for past 36 months and sharing information on calculating kWh use for electrical appliances and do-it-yourself meter reading. “The homeowner can borrow a Kill-A-Watt reader if they want to get specific energy use for an appliance,” she said.

KIDS WITH PLANS

The measures the students chose for their plans were mainly the kind of low- and no-cost behavior changes that utilities (and frugal families) have been promoting to customers for decades. Turning off lights in empty rooms, only doing full loads of laundry or dishes and sealing around windows and doors were popular choices. Since most families use engine block heaters to ensure that vehicles and tractors can start after a cold night, students learned how to put the heaters on timers.

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ENERGY SERVICES
Western Area Power Administration



Ekalaka Elementary School in rural southeastern Montana boasts an impressively energy-savvy fifth grade class. (Photo by Ekalaka Public Schools.)

Some measures offered unintended dividends, as students proposed to save energy by reading more and using the computer less, or watching TV with the family instead of alone in their rooms. “One kid came up with the idea of playing board games or hide-and-go-seek when friends came over instead of playing video games,” Waterland recalled.

She added that many plans involved getting other members of the family to change their habits. Several students decided that their siblings should take shorter showers or turn off their stereos, while another asked his mother to do fewer loads of laundry. Others tried to shift the energy use to somebody else’s household. “One participant suggested that his grandmother could bake the Thanksgiving pies and dinner rolls so his family didn’t have to use the oven,” laughed Waterland.

TUNING UP STRATEGY

After the first month of the competition, it was clear that the fifth grade team was not getting the hoped-for results. “September of 2013 was three degrees warmer than the average, but both October and November were colder than average,” observed Waterland. “People were staying inside more and using their heating appliances more. The team’s energy use actually went up 3 percent.”

To refocus the young energy savers, Waterland did a recap of

energy conservation measures using town’s recent retrofit of its Christmas decorations to illustrate the principles of saving energy. To encourage more use of math as a tool, Elmore asked participants to calculate the dollar savings for their measures. One student took the suggestion and figured out that turning down his home’s water heater would save the family \$120 per year. Not surprisingly, that student’s family led the competition, using only 3,856 kWh compared to 7,536 kWh in 2012.

GOOD TO PLAY, WIN

The tie for second place earned the Ekalaka fifth graders \$1,000 in prize money, which will fund a class field trip to the Campbell County School District Planetarium in Gillette, Wyo.

Waterland believes that the benefits of participating in America’s Home Energy Challenge go beyond prize money, however. “It helps our next generation of consumers to understand energy use, and starts developing habits that will save them money and energy in their own homes,” she said.

It also gives Southeast Electric Cooperative another bond with its customers. “I love going into the schools and meeting with the teachers, kids and families,” Waterland declared. “I hope we do the Challenge next year and I would like to see other Western customers join the competition,” she added. ⚡

LEARN “COOL MOVES” TO REDUCE AIR CONDITIONING PEAK

Those “lazy, hazy, crazy” days of summer are here, but Nat King Cole might have sung a different tune if he had to answer calls from utility customers demanding to know why their electric bills are so high. Incentives for efficient new cooling systems can chip away at your summer peak, but they only work when a customer is ready to replace an old system. What you really need is a low-cost strategy that works for every customer with air conditioning—you need to show them some cool moves.

Energy-efficiency expert Jill Cliburn offered her road-tested tips for reducing a utility’s cooling load in last month’s Lunchtime Webinar, presented by Clean Energy Ambassadors (CEA). *What Are Your 4 Cool Moves* laid out a campaign that significantly lowers electricity bills and improves comfort for customers at little (or no!) cost to the utility.

SOCIAL MARKETING SELLS

If you want to get customers to change their energy use habits, you have to make those changes personally meaningful to them—that is the lesson of social marketing. Instead of peppering people with bill stuffers listing common-sense energy-saving tips, put the tips in a timely and fun context. Give your customers a reason to get on board.

Social marketing has been around for a while, but if you need some help getting started, Cliburn suggests the book, *Switch*, as a resource for planning your campaign. “Social marketing is a process that works very well with the kind of behavior change demand-side management programs seek,” she said.

The book recommends seven steps for launching a campaign:

- Define the change – This seems pretty obvious, but it is surprising (or not) how often programs just drift. You can’t hit a target



Artwork by the Ad Council

if you don’t know what it looks like, so whether you have a community-wide sustainability goal or a target for peak demand reduction, define a specific outcome.

- Form a team – That is not just utility staff, either. According to a study by McKinsey & Company consulting firm, simple behavior changes could potentially reduce energy demand in the U.S. by 16 to 20 percent. It takes teamwork to even approach results like that, so make sure to include community partners and customers on your team.
- Look for bright spots – Identify some easy successes that make positive stories.
- Script critical moves – Give your customers instructions—“cool moves”— to get similar results.
- Shrink the change – Turn the change into something people can picture themselves doing in a short amount of time. Achieving small successes often motivates people to aim higher.
- Get the “story” – The story is a fundamental part of the campaign because people want to hear how their actions can make a difference.

- Use behavioral triggers – Facts and figures will only take your program so far. Tie offers or calls to action to events that are happening to your customers now.

THE TO-DO LIST

Lists are a great way to organize our world, but long lists can take focus away from the items on the list. Many social scientists believe that people can keep only seven to 10 items on their mind at once, but Cliburn keeps her critical “cool moves” to a concise four:

1. Lose the hot lights – Old-fashioned (pre-2007) incandescent lights are better at heating than lighting, and add to a building’s cooling load. Let your customers know that energy-efficient lighting is much cooler than standard lighting, and they have plenty of options. Suggest that customers change a few lights at the beginning of summer. If they notice a difference, they might change a few more.
2. Seek shade – Shading done outside the home is more effective than interior cooling systems. A fully grown oak provides cooling equivalent to four air

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conditioners. While waiting for that tree to reach maturity, homeowners might consider planting fast-growing vines where they can block the sun. Creating a schedule for closing window shades is another cost-free way to keep the house cool. Remind customers who put reflective film on their windows to take it down in the winter.

3. Set it right – Installing a programmable thermostat or one that is remote controllable can pay off all year around. Talk with your customers about what temperature is comfortable rather than picking an arbitrary set-point. Many stores and offices are over-cooled in the summer to the point where occupants need sweaters. A good rule of thumb is that 15 degrees cooler than the outdoors feels comfortable by comparison. If your customers are causing a 5 p.m. peak by cranking the air conditioning when they get home from work, suggest they set the thermostat to pre-cool the house before they get home. Remind them, too, that setting the thermostat lower does not cool the house any faster.

4. Cool efficiently – The “cool moves” list is a good opportunity to discuss utility programs that promote high-efficiency cooling equipment. Whether it is an attic fan, a room unit or central air conditioning, there are energy-efficient options on the market. Educate customers about high-SEER (seasonal energy-efficiency ratio) and Energy Star-qualified systems and efficient alternatives like ceiling fans, swamp coolers and heat pumps.



A FEW MORE POINTERS

Your customers are on social media, so you need to join them if you haven't already. Utilities can also partner with community organizations like newspapers, radio stations or municipal sites that have established media outlets already.

Make your program a part of your customers' world. Ask people to share their own tips on your Facebook page, and post photos of their families putting their energy-saving strategies into action. Be a presence at community events, like farmers' markets, outdoor movie nights and summer festivals.

Translate those energy savings into something tangible. One utility sent customers bill stuffers that proclaimed, “Save energy, save vacation,” or even just “save movie night.” Another utility set up a partnership program where customers could donate their savings to a veterans' organization.

Limit your campaign by space and time. Pick a season, a message and a few objectives and stick to them. Bracket the campaign with roll-out and wrap-up events, and don't forget to communicate with other staff members. They may have events on their schedules that tie in well with your campaign. Finally, celebrate your successes. Let customers know what they accomplished and let them know how much you appreciate their efforts.

DO IT NOW

It may be too late to do a full-scale campaign for the summer of 2014, but you can start laying the groundwork for next year. Or you can plan a heating season campaign using the same social marketing strategy.

Whichever peak you are trying to control, feel free to steal the ideas in the archived webinar on the CEA website. Just be sure to share your success story with CEA and Energy Services afterward. ⚡



REDUCE ENERGY USE IN COMMERCIAL BATHROOMS

QUESTION:

Can you recommend ways to save energy in commercial bathrooms?

ANSWER:

Commercial bathrooms offer many opportunities for energy savings. Bathroom efficiency measures can have a positive effect on any business, but hotels, schools, recreation centers and other facilities with large multiple bathrooms can really benefit from the following measures.

INSULATE PIPING

Most codes require insulation for hot-water piping, but insulation may have been damaged or removed during maintenance operations. Replace it with the minimum insulation required by your jurisdiction's most recent energy code, or better. For example, the Washington State Energy Code requires a minimum of half an inch of insulation, with a conductivity between 0.24 and 0.28 (roughly R-4 per inch) for supply lines up to 2 inches in diameter, and 1-inch insulation for piping up to 4 inches in diameter.

REDUCE FLOW

Reduction of domestic hot water (DHW) consumption can be accomplished by limiting the flow rate from fixtures, automatically shutting off the hot (and cold) water after a measured time interval and reducing supply temperatures. The first two measures are required by most plumbing codes for facilities open to the general public. Flow rates are usually limited to 2 gallons per minute (gpm) with the requirement that the valve self-close within 30 seconds. Self-closing faucets can save money and energy – and

prevent vandalism. Also, the Building Energy Software Tools Directory, by the Department of Energy, provides links to several useful general water conservation software tools.

REDUCE TEMPERATURE

Many codes and statutes also limit the maximum temperature at lavatories in commercial buildings to 120 degrees. Resetting the water heater thermostat to deliver 120-degree water is usually a simple and cost-effective way to save energy in bathrooms. For water heaters serving additional, higher temperature hot water loads (dishwashers, etc.), equip the fixture with a thermostatic mixing valve or a booster heater for the higher temperature loads.

CONTROL RECIRCULATION

Larger commercial buildings usually have systems to recirculate hot water from the most remote hot water fixture back to the water heater. The idea is to keep the water in the distribution piping hot at all times and reduce the time a user must wait for hot water. Many state and federal energy codes now require a time clock or other automated means to shut down the hot water recirculation pump during unoccupied hours. These controls save energy by eliminating heat loss from the recirculation piping when the building is unoccupied. They also cut the run time and electrical consumption of the recirculation pump by almost half.

UPGRADE LIGHTING

Bathrooms are occupied only intermittently, usually less than 20 percent of the time. That makes bathroom lighting in a commercial establishment

the perfect application for occupancy sensors that turn off the lights when the bathroom is not in use.

RECOVER HEAT

Exhaust systems are another energy-user in bathrooms. In larger commercial buildings, a single fan often serves several bathrooms and it runs during the occupied hours. In small commercial buildings, the exhaust fan is often wired to the light switch and only runs when the lights are on. This can lead to under-ventilation of the bathrooms and indoor air quality (IAQ) problems. Modifying light switch-operated fans to run during the occupied hours will increase building energy use slightly, but will improve IAQ.

You can make up that loss by using the moist exhaust air leaving the building to preheat (or cool) outside air. Learn more about heat recovery ventilators, from the Energy Efficiency Emerging Technologies Database. This collection of practical, commercially available, but not yet widely used energy efficiency technologies is regularly reviewed and evaluated by energy experts and engineers.

UPGRADE HEATING SYSTEM

Bathrooms are usually located in the core of larger buildings with no outside walls. However, some smaller buildings have bathrooms on outside walls that need to be heated in winter. The heat source for outside wall bathrooms is often an electric resistance heater that runs constantly. Consider installing a programmable thermostat (line voltage or 24v. as appropriate) or a connection to the building energy management and control system to limit operating hours and save energy. ⚡

ENERGY STAR PROGRAM ADDS CLOTHES DRYERS

Utilities looking to expand their energy-efficiency programs to include new appliances may want to consider offering rebates for Energy Star-certified clothes dryers. On May 19, the Environmental Protection Agency (EPA) finalized the ENERGY STAR Version 1.0 Specification for Clothes Dryers. The standard will take effect on Jan. 1, 2015.

Effective in 2015, the new specifications will recognize a selection of high-efficiency electric, gas and compact dryers that will use approximately 20 percent less energy than what the minimum efficiency standards require, the EPA stated. If all residential clothes dryers sold in the United States meet the Energy Star requirements, utility cost savings will grow to more than \$1.5 billion annually. According to the agency, the increase in efficiency could prevent more than 22 billion pounds of greenhouse gas emissions each year.

Clothes dryers are in more than 80 percent of U.S. homes, and account for about 6 percent of residential electricity consumption. "The addition of clothes dryers expands the range of Energy Star products to include one of the most energy-intensive home appliances not yet covered by the program," said EPA Administrator Gina McCarthy. "Working with industry on innovative approaches to address our changing climate, we are helping consumers select more energy efficient appliances, save money and reduce greenhouse gas emissions."

Dryer models that meet the new Energy Star requirements are likely to have improved auto termination sensors, which help reduce energy use by ending the drying cycle once clothes are dry. Some of the more efficient gas and electric Energy Star dryers will employ a promising new technology to recapture the hot air the dryer uses and pump it back into the drum to dry more clothes. Re-using most of the heat creates a heat pump dryer that is more efficient and avoids

the need for ducts to exhaust heat out of the laundry room.

The new Energy Star specification also establishes optional "connected" criteria for residential clothes dryers. This connected functionality offers consumers convenience and energy-savings features, such as an alert indicating there is a performance issue, or feedback on the energy-efficiency of different cycle selections. These products will also be "smart grid" ready, making the appliances a natural for demand response programs. Consumers will be able to connect the dryer with their local power provider to

take advantage of programs that save them money on their energy bills, and help the utility with load control.

To earn the Energy Star label, products must be certified by an EPA-recognized third party, based on testing in an EPA-recognized laboratory. In addition, manufacturers of the products must participate in verification testing programs operated by recognized certification bodies.

In 2013 alone, Energy Star helped Americans save \$30 billion on their utility bills and prevent greenhouse gas emissions equal to those of 38 million homes. ⚡

