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Co-op Lighting Lessons

2014 brings brighter efficiency standards and savings

By Amber Bentley

As federal efficiency standards phase out traditional incandescent lightbulbs, electric co-ops are testing which lighting technologies work best for consumers. Co-ops like McDonough Power Cooperative have long championed compact fluorescent lamps (CFLs), the first cost-effective, energy-saving alternative to traditional bulbs.

"We give away CFLs at our annual meeting and with energy audits. We see them as a quick, low-cost way our members can start saving on their electric bills," explains Kelly Hamm, Energy Services Manager. **11129B3A-1002C**

By 2014, household lightbulbs using between 40-W to 100-W will need to consume at least 28 percent less energy than traditional incandescents. Because incandescents use 90 percent of their energy producing heat, upgrading saves Americans an estimated $6 billion to $10 billion in lighting costs every year.

More lighting changes will roll out in coming years. The federal Energy Independence and Security Act of 2007 requires that lightbulbs become 70 percent more efficient than classic bulbs by 2020 (LEDs already exceed this goal.)

Lighting accounts for roughly 13 percent of an average household's electric bill. Hardware store shelves are filled with lightbulb options. What works best for co-op members?

Electric co-ops teamed up on lightbulb testing with the Cooperative Research Network (CRN), the research and development arm of the National Rural Electric Cooperative Association, an Arlington, Va.-based service arm of the nation's 900-plus consumer-owned, not-for-profit electric cooperatives.

"We found most residential consumers still prefer to use CFLs over more expensive, but more energy efficient, LEDs [light-emitting diodes]," remarks Brian Sloboda, CRN senior program manager specializing in energy efficiency. "The price of LEDs for home use has substantially dropped, so we may begin to see more LEDs as it becomes more economically feasible to buy them."

A helpful addition to lighting products is the Lighting Facts Label. Much like nutrition labels found on the back of food packages, this version shows a bulb's brightness, appearance, life span, and estimated yearly cost. The Lighting Facts Label was created by the U.S. Department of Energy (DOE) to help consumers understand the product and buy the most efficient lightbulb.

Consumers' energy-efficient lighting options include:

- **Halogen incandescents:** Use 25 percent less energy, last three times longer than regular incandescent bulbs
- **CFLs:** Use 75 percent less energy, last up to 10 times longer
- **LEDs:** Use between 75 percent and 80 percent less energy, last up to 25 times longer

Federal lightbulb standards have the potential to save consumers billions of dollars each year. For an average American house with about 40 light fixtures, changing just 15 bulbs can save

about $50 a year per household, according to DOE.

A word of warning when purchasing new types of bulbs: You generally get what you pay for.

"Some manufacturers exaggerate claims of energy savings and lifespans, and cheaper models probably won't last as long as higher-quality bulbs," Sloboda cautions. "If you look for the ENERGY STAR label, that means the bulb exceeds minimum efficiency standards as tested by the federal government."

The best way to benefit from this fast-changing technology is to purchase a more energy efficient lightbulb the next time one goes out, Sloboda concludes.

To learn about lighting options, visit energysavers.gov/lighting. For shopping tips visit ftc.gov/lightbulbs.

Sources: Cooperative Research Network, U.S. Department of Energy

Amber Bentley writes on consumer and cooperative affairs for Touchstone Energy® Cooperatives, the national branding campaign for more than 740 electric cooperatives across the country.

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Harvesting Efficiency

Energy efficiency offers rich rewards for farmers

By Megan McKoy-Noe, CCC

Every dairy cow carries an energy price tag. Farmers pump water—and $2.6 billion in energy dollars—to boost crops.

At the end of the day, energy, both direct and indirect, accounts for 13 percent of the average farmer's production expenses. To enhance their bottom lines, more farmers are turning to energy efficiency.

Electricity powers a farm's heating (water, space, heat lamps), pumping (irrigation, water wells, manure lagoons), refrigeration, ventilation, lighting, and fans (drying grains, aeration). Material handling—such as feed augers, manure conveyors, milking, and egg conveyors—also drain resources.

The American Council for an Energy Efficient Economy estimates farmers could save $88 million annually by investing in efficient motors and lighting. How can Illinois farmers reap efficiency benefits?

EnSave, a national agricultural energy efficiency firm, provides a pyramid of steps farmers can take to cut down energy use. The greatest savings come from deploying more efficient equipment, although behavioral changes and a simple analysis of how energy is consumed can result in significant savings, too.

Equipped to save

Each farm—dairy, poultry, beef, hog, or crop—offers opportunities for efficiency improvements. For example:

- **Clean equipment:** Removing dust, soot, and debris from equipment will allow it to do more work with less effort, extending its life and reducing energy use.
- **Inspect regularly:** Equipment should be checked regularly. Replace parts that are showing excessive wear before they break and cause irreparable damage.
- **Plug leaks:** Be it a pinprick hole in a hose or a drafty barn, leaks waste money, fuel, and electricity.
- **Remove clutter:** Hoses should be regularly flushed to clear debris. Ensure fan and motor intakes and exhausts remain clutter-free for maximum circulation and efficiency.

Light lessons

After tuning up equipment, check lights. Light work areas, not entire buildings. Use daylight when possible. Install dimmable ballasts to control light levels.

The type of light used makes a difference. Although useful as a heat source in limited situations (to keep water pumps from freezing in winter, for example), incandescent lightbulbs only convert 10 percent of the energy used into light. The rest of the energy is given off as heat. Consider these energy-saving lighting options, as compared to incandscents:

- **Halogen incandescents** use 25 percent less energy and last three times longer than traditional incandescent bulbs **4216D3-500A**
- **Compact fuorescent lamps (CFLs)** use 75 percent less energy and last up to 10 times longer
- **LEDs** use between 75 percent and 80 percent less energy and last up to 25 times longer
- **Cold cathode fluorescent lamps (CCFLs)** last up to 25 times longer and offer the same efficiency as CFLs.
- **T-8 and T-5 flourescent lights** with electronic ballasts generate less noise and produce more light per watt. These bulbs also offer better color rendering, minimal flickering, cooler operation, and energy savings.

Harsh surroundings

Farm equipment must survive in a rough environment. Before buying new equipment or lighting, make sure the gear can survive fluctuating temperatures, wet locations, long hours of operation, and large loads.

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Confirm the manufacturer's specifications that the unit is intended for the environment, and review the warranty and conditions. Make sure the way you plan to use it will not void the warranty. Look for knowledgeable suppliers and installers familiar with the local climate and your farm's needs. Typically, farms need more rugged devices than what's available at a low cost from a retail or big-box store.

Seeds of change

For regional or crop-specific efficiency methods, use the U.S. Natural Resources Conservation Service energy calculators, energytools.sc.egov.usda.gov. Assess how much energy a farm needs for animal housing, irrigation, and tillage and discover ways to cut costs. Dairy farmers may also visit www.usdairy.com/saveenergy.

Funding for efficiency upgrades is available through the Rural Energy for America Program (REAP). Since 2008, REAP has funded more than 6,800 renewable energy and energy efficiency grants and loan guarantees as well as 600 farm energy audits. Get details at www.rurdev.usda.gov > Energy > Rural Energy for America Program.

Farmers can also apply for financial and technical help through the Environmental Quality Incentives Program (EQIP), a program from USDA's Natural Resources Conservation Service. EQIP supports energy initiatives to manage and reduce agricultural energy needs. Learn more at www.nrcs.usda.gov > Programs >Financial Assistance > Environmental Quality Incentives Program.

Sources: American Council for an Energy Efficient Economy, EnSave, U.S. Natural Resources Conservation Service, Innovation Center for U.S. Dairy

Auditing Energy: Small Measures, Real Savings

By Magen Howard

No matter the age of your home, it could benefit from an energy audit. McDonough Power Cooperative offers low-cost home energy audits conducted by GreenUp Technology. But you can get started on your own in finding low-cost solutions that could save money on your monthly electric bill.

First, ask yourself a simple question: Does my home feel drafty and cold in the winter, or stuffy and hot in the summer? If yes, then it probably experiences air leakage.

To track down where those spots are, start with the usual suspects—like damaged seals around doors and windows. If you see daylight or feel air, then apply caulk and weather stripping to keep outdoor air where it's supposed to be. But don't forget spots you might not immediately think of, like recessed canister lights and electrical outlets. Outlet insulation kits can be purchased for as little as $2, and you can fix up your canister lights with some caulk around the edges. Also look where walls meet the ceiling. Cobwebs mean you've got drafts.

Next, peek into the attic and inspect the crawl space or basement for sufficient insulation—how much you need depends on your climate. Check out the insulation calculator from the Oak Ridge National Laboratory at www.ornl.gov/~roofs/Zip/ZipHome.html. Keep in mind insulation won't do its job well if you don't have a proper air barrier working in tandem. That means all joints and cracks must be sealed between your living space and insulation.

Finally, look to your light fixtures. Compact fluorescent lightbulbs (CFLs) are up to 75 percent more efficient than traditional incandescent bulbs, and they've come a long way in light quality, design, and affordability. You can purchase CFLs in a variety of shapes and hues. They cost more upfront, but you'll make your money back in less than nine months and, after that, they start saving money. Make sure to purchase a CFL that's rated by ENERGY STAR, the U.S. Environmental Protection Agency's program that denotes products meeting specific energy efficiency criteria. ENERGY STAR-rated CFLs will typically last 10 times longer than a traditional incandescent bulb producing the same amount of light.

LEDs—light-emitting diodes—are in the next wave of residential lighting. An ENERGY STAR-rated model is estimated to use only a quarter of the electricity consumed by traditional bulbs and can last for 25 years. As with many new technologies, the up-front cost for an LED bulb is still much more than even a CFL, but prices are expected to drop as new products are developed.

To learn more about ways to reduce your electric bill, visit TogetherWeSave.com or call McDonough Power at 309.833.2101 and ask about our home energy audit program. **5412B5-270C**

Sources: EnergySavers.gov, Eastern Illini Electric Cooperative, EnergyStar.gov

Magen Howard writes on consumer and cooperative affairs for the National Rural Electric Cooperative Association, the Arlington, Va.-based service organization for the nation's 900-plus consumer-owned, not-for-profit electric cooperatives.

Member Prizes

Every month we will have four map location numbers hidden throughout The Wire. If you find the map location number that corresponds to the one on your bill (found above the usage graph), call our office and identify your number and the page that it is on. If correct, you will win a $10 credit on your next electric bill.

Electrical Safety Around Grain Elevators

By Amber Bentley

Working around grain bins creates hazards that are often overlooked by even the most seasoned farm hands. Always keep these safety tips in mind:

Suffocation/engulfment

Entrapment can happen in a second when dealing with grain, which often is compared to quick sand. This is leading cause of death in storage bins.

- Do not enter grain bins during active loading and unloading times
- Never work alone
- Make sure to wear proper safety equipment

Fires/explosions

When grain dust accumulates, it can sometimes create the right conditions to spark a fire. These fires are difficult to stop and usually end with a large explosion. **6315SV38-708A**

- Be sure your ventilation system is working properly
- Clean regularly to keep grain dust accumulations to a minimum
- Do not smoke or ignite any other open flames while in the grain bin

Toxic atmospheres

Mold, fungi, and chemical fumes from decayed grains can create a deadly atmosphere.

- Store fully dried grain at the proper moisture
- Wear a mask or filter respirator to limit the amount of direct contact to the fumes
- Try to keep animal and insect infestations to a minimum

Machine malfunctions

Machines also pose deadly risks, including amputation, entanglement, and electrocution.

- Do not operate these machines while inside the bins
- Ensure that all equipment is properly guarded
- Be on the lookout for overhead power lines

- Check for frayed cables
- Always wear safety belts or some form of protection

Sources: U.S. Occupational Safety & Health Administration: Grain Handling, University of Nebraska-Lincoln Environmental Health & Safety: Grain Bin Safety, National AG Safety Database: Grain Storage Safety

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Our office will be closed for Labor Day on Monday, September 2, 2013.

Tip of the Month

Like homes and other businesses, farms of all types can lower their electricity bills by turning off or reducing use of lights and small equipment in outbuildings. Timers and sensors can help, too. Regular cleaning, maintenance, and seasonal tune-ups help keep larger equipment running at top efficiency.

Source: E Source