# Keeping a Secure Electric Grid

MESSAGE FROM GENERAL MANAGER LEROY T. SKLOSS

**Several months ago, a piece of speculative fiction was shown on cable television depicting events that could happen should an electricity grid failure cause a national blackout.**

In the yarn spun by the show's writers, a cyberattack causes a lengthy national grid failure, and life without electricity is difficult, as you can imagine.

The program's theoretical plot is, of course, a worst-case scenario with far-reaching consequences that we don't want to experience in real life. This is why electric cooperatives have worked diligently with the North American Electric Reliability Corporation and federal agencies over the past several years to strengthen reliability and cybersecurity standards for the nation's bulk power infrastructure system, known collectively as the grid.

The National Rural Electric Cooperative Association is working with its member cooperatives, including Karnes Electric Cooperative, to help ensure that co-ops comply with NERC reliability and cybersecurity standards.

Cooperatives are also working on the cutting edge of research into cybersecurity.

The U.S. Department of Energy recently awarded $3.6 million to the NRECA's Cooperative Research Network to develop cybersecurity management tools for small utilities. NRECA and Honeywell Corp. plan to provide additional funding for a total of $4.7 million.

NRECA will collaborate with researchers to create a simple, automated network device that will enable small utilities, such as cooperatives, to manage system security more reliably and cost-effectively, according to Craig Miller, chief scientist at NRECA.

"The system will simplify cybersecurity management for small utilities with limited IT resources," Miller said, adding that improved security for small systems supplements the security of larger utilities.

No one can guarantee that a large-scale blackout caused by cyberterrorists can't happen. Even small electric cooperatives are part of a national effort to protect the reliability and security of our power grid.

HEINZ MEIS | THINKSTOCK

**Co-ops across the nation are banding together to protect the security of our power grid.**

# What Not To Do When It's Cold Outside

**Follow these tips to stay safe and save energy during winter.**

**1. DON'T OVERSTUFF YOUR REFRIGERATOR.** Stacking holiday leftovers on top of each other and squeezing extra containers of food onto every refrigerator shelf will prevent the air from circulating. That forces the appliance's compressor to work harder and use more electricity.

**2. DON'T CRANK THE THERMOSTAT WAY UP** to heat a cold house in a hurry.

PAUL VASARHELYI | THINKSTOCK

**Instead of cranking up the thermostat, slip on a sweater to keep warm.**

Turning the heat up to 90 degrees won't warm a 60-degree house any quicker than turning it up to 72 degrees.

**3. DON'T RUN BATHROOM AND KITCHEN EXHAUST FANS** any longer than you have to. Flip them on to clear smoke while cooking and steam while showering.

**4. DON'T USE A BARBECUE GRILL OR A PROPANE PATIO HEATER INDOORS,** even if your central heating system is on the fritz. This is a fire hazard and can expose you to carbon monoxide poisoning.

**5. DON'T TURN OFF YOUR CEILING FANS.** Ceiling fans can save energy during winter. The trick: Set the spin direction to push air up. In this mode, the blades slant downward. Heat rises, so in the winter, the blades should move warm air toward the ceiling and walls and down into the room.

GETTY IMAGES/ISTOCKPHOTO

# Want To Win a Trip to the Nation's Capital?

## It's Youth Tour Time!

**Electric cooperatives send hundreds of high school students from across the country to Washington, D.C., annually for the Government-in-Action Youth Tour.**

The winner of the Karnes Electric Cooperative Youth Tour Essay Contest will receive a travel package valued at $2,350 to join other Texas high school students to see sights such as the White House, the House and Senate chambers, the Supreme Court, Washington National Cathedral, Arlington National Cemetery, the Smithsonian Institution and many other important national sites. The travel package includes air transportation to and from Washington, D.C., hotels, meals, entrance fees and $250 cash for miscellaneous expenses.

The 2014 Youth Tour will leave Irving on June 12 and return June 20.

Applicants must have completed their sophomore year by June 11, 2014, and be a member, or the legal dependent of a member, of Karnes Electric Cooperative.

For complete information, call Janet Scheffler at (830) 780-3952. Applications may be picked up at any Karnes Electric Cooperative office or obtained by sending an email request to jscheffler@karnesec.org.

## Happy New Year
### FROM KARNES EC

The directors and employees of Karnes Electric Cooperative hope that 2014 brings peace, prosperity and happiness to all of our members.

Our offices will be closed on Wednesday, January 1, but as on all holidays, crews will be on standby in case of a power interruption.

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## Karnes Electric Cooperative

P.O. Box 7, Karnes City, TX 78118

**GENERAL MANAGER**

Leroy T. Skloss

**BOARD OF DIRECTORS**

**Arlon Retzloff,** President, *Whitsett*
**Martin R. Harris Jr.,** Vice President, *Tilden*
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**COOPERATIVE OFFICES**

**Main Office**
1007 N. Highway 123, Karnes City

**District Office**
1824 W. Goodwin, Pleasanton

**Pay your bill, submit meter readings and view your account summary at karnesec.org.**

## Contact Us

*For information and outages during office hours*

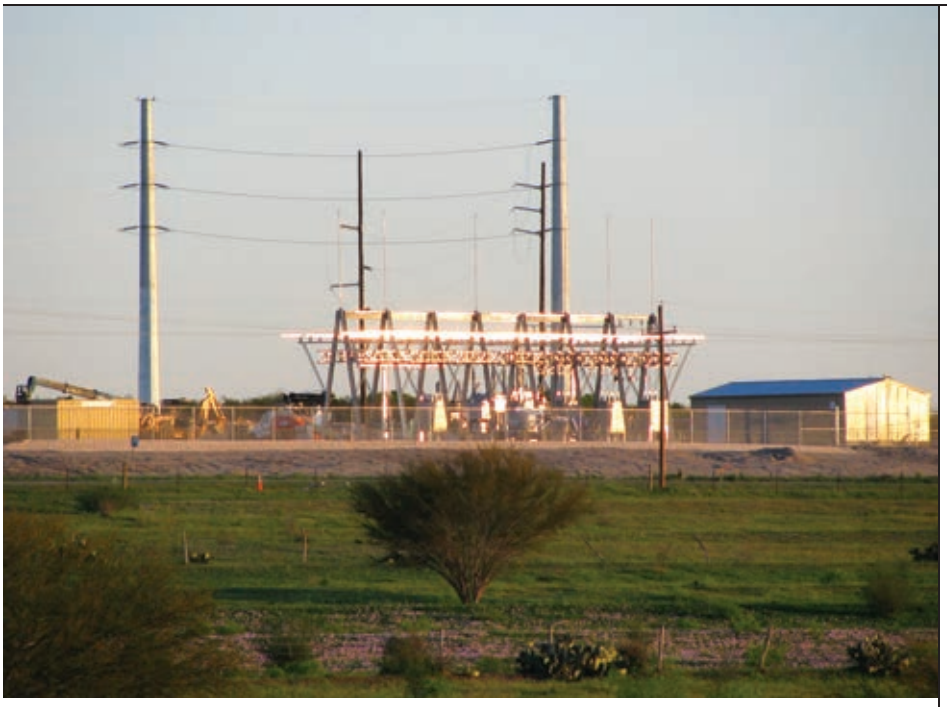
**(830) 780-3952** Karnes City
**(830) 569-5538** Pleasanton
**1-888-807-3952** Toll-free

*To report a power outage after 5 p.m. and on weekends and holidays*

**(830) 780-3952**
Coy City, Ecleto, Floresville, Gillette, Goliad, Karnes City, Kenedy, Runge, Three Rivers, Tilden and surrounding areas

**(830) 569-5538**
Charlotte, Christine, Pleasanton, Poteet, Verdi and surrounding areas

**FIND US ON THE WEB**
**karnesec.org**



Substations are essential to safe and reliable electric distribution service and should only be entered by authorized personnel.

# Substations Perform Powerful Role

*Electrical system depends on devices behind the fence*

**Electrical substations are vital to the delivery of power to your home or business. The complex array of equipment serves as transit points in this system, with the ability to raise ("step up") and lower ("step down") voltage.**

As power gets closer to its destination, substations decrease it to a safe level. Substations also keep voltages constant, preventing harmful fluctuations.

Several types of substations are found between power plants and homes. Each contains different equipment, including transformers, lightning arrestors, circuit breakers, insulators and more. A transformer performs the heavy work, altering voltage as needed.

Initially, step-up substations at power plants increase electricity's voltage to various levels (between 69,000 and 750,000 volts) so it can be shipped through high-voltage transmission lines. Once electricity gets closer to its destination, transmission substations typically reduce the voltage to between 23,000 and 69,000 volts.

From there, the power moves over smaller transmission facilities to electric co-op distribution systems. Distribution substation transformers then slash the voltage even lower, normally to 12,500 volts.

At this point, the distribution lines you see running up and down rural roads and across fields bring power to you. To make that energy safe for household use, a pole-mount transformer (the round object resembling a small gray garbage can located near the top of a utility pole outside your residence) or a pad-mount transformer (the green boxes dotting your neighborhood) cuts the voltage once more, to between 120 and 240 volts.

Substations remain an important part of your electric cooperative's system.

Remember, the voltage entering and exiting substations far exceeds anything you'll find at home. Substation fences protect you and the equipment housed within and help ensure that your co-op can continue providing you with a safe, reliable and affordable supply of power.

# Moving?

*Plan to manage higher energy bills in a larger home*

**So you're moving from an apartment into your first new home: Congratulations. Now brace yourself for higher energy bills.**

Houses typically are larger than apartments, so your bill for lighting, appliance use and heating and air conditioning is bound to be higher.

The good news: You can do a lot to lower your home's energy costs.

## For starters:

- Ask your real-estate agent to provide you with a tally of the home's utility bills for the 12 months. This will give you a realistic idea of how much you'll have to pay and give you a baseline.
- Have a qualified HVAC technician or electrician install a programmable thermostat in your new home. The device will automatically lower the temperature a little bit on winter days after everyone leaves for school and work—and ease it back up before the family gets home. (And, of course, it works the opposite in summer.)
- As you make initial renovations and decorating changes that will turn a house into your home sweet home, inspect the attic insulation. Reattach insulation that has fallen away from the attic ceiling or floor (it should touch, not droop) or replace missing or worn insulation.
- If you have to buy a washing machine, clothes dryer, dishwasher, refrigerator or HVAC system shortly after you move in, choose a model with the Energy Star label.


KARNES EC

ANDY DEAN | THINKSTOCK

TAMMY BRYNGELSON | THINKSTOCK

Ice-laden tree branches can wreak havoc with electric lines, create safety risks and cause extensive outages.

# It's Ice Storm Season

*Freezing rain and sleet can be an electrical distribution system's worst enemy*

**Texas may not get the heavy snowfalls that our northern neighbors endure in the winter, but the Lone Star State is subject to weather that can be as destructive to an electrical system as a tornado or hurricane: an ice storm.**

When conditions are right—freezing on the ground and warmer up in the atmosphere—precipitation can turn to ice, coating trees and power lines in a heavy sheath. The weight of the frozen water can cause power lines to sag and limbs to break, and can even snap power poles, wreaking havoc on Karnes Electric Cooperative's distribution system.

If that happens, the first thing that we'll do as soon as it's safe is to send out our line crews to begin the process of assessing and repairing the damage. If it's extensive enough, we will ask our sister electric co-ops for help. Adhering to cooperative principle No. 6, Cooperation Among Cooperatives, co-ops help one another in a time of disaster.

Depending on how severe the storm was and how widespread the damage, however, it could take hours or even days to get the lights back on for all of our members.

Are you prepared for a power outage that lasts that long? At the least, you should have a three-day supply of water (one rule of thumb is a gallon per person per day) and food that can be prepared without electricity, such as canned goods and ready-to-eat prepared meals. An adequate supply of blankets, a flashlight or candles, and a battery-powered radio are also useful items to have in a winter preparedness kit.

Karnes Electric Cooperative encourages you to get prepared before a storm hits. If a winter storm watch is issued for our area, get ready. That means that conditions are right for weather, including sleet, low temperatures and high winds.

Once a storm has passed, be careful if you venture outside. Slipping on the ice can lead to broken bones or worse. Power lines brought down by ice pose the greatest electrical risk because you can't tell whether they are still energized.

"You cannot tell whether a power line is hot just by looking at it," said Brett Brenner, president of Electrical Safety Foundation International. "Always assume that downed power lines are live and keep at least 10 feet away from them and anything touching them."

If you have access to a portable generator and want to use it in a prolonged power outage, be sure you know what you are doing. Generators can be deadly if misused. The easiest way to get hurt using a generator involves operating it inside your home—or even too close to it—which allows carbon monoxide fumes to enter living areas. Most generators can emit deadly levels of carbon monoxide in a matter of minutes.

In addition, never plug your portable generator into a wall socket; it can threaten co-op lineworkers by producing "backfeed" that unexpectedly re-energizes power lines. Permanent generators must have a transfer switch installed to prevent backfeeding.

If severe weather strikes, we are ready to do whatever it takes to restore your electrical service. We exist to serve you, our members.

# Solid Lighting Solutions

*LEDs meet (and exceed) 2014 lighting efficiency standards*

BY MEGAN MCKOY-NOE AND BRIAN SLOBODA

**A new year calls for updated lightbulb efficiency guidelines. No need to use bulbs with a twist; light-emitting diodes can help you switch on savings.**

Congress called for improved energy-efficiency standards for traditional incandescent bulbs under the federal Energy Independence and Security Act of 2007. By 2014, lightbulbs using from 40 to 100 watts must consume at least 28 percent less energy than classic bulbs. The change will save Americans an estimated $6 billion to $10 billion in lighting costs annually.

When the next wave of standards kicks in this month, traditional 40- and 60-watt incandescents will no longer be available. In their place, some consumers are filling the gap with a solid solution: LEDs.

## 'Solid' Lighting

Incandescent bulbs create light using a thin wire, called a filament, inside a glass bulb—a delicate connection that can easily be broken. In contrast, LEDs are at the forefront of solid-state lighting—small, packed electronic chip devices. Two conductive materials are placed together on a diode. Electricity passes through the diode, releasing energy in the form of light.

LEDs were invented in 1960 at General Electric and originally were a red color. They were used in remote controls, exit signs, digital watches, alarm clocks and car signal lights. After the invention of blue-colored LEDs in the 1990s, the devices quickly gained momentum for large-scale lighting.

## LEDs Offer Several Benefits

- They could last longer, perhaps for decades.
- The energy to use them could be substantially less than that of compact fluorescent lamps or other fluorescents.
- With no mercury content, LEDs are less hazardous than fluorescents.
- The products are rugged and more resistant to breakage.
- LEDs perform well in cold climates, especially outside.
- They can be dimmed and produce a more pleasing light.

However, some consumers avoid LEDs because the price tag exceeds normal lightbulb costs. The true value lies in the lifetime of the bulb. It takes about 50 traditional incandescent bulbs, or eight to 10 compact fluorescents to last as long as one LED lamp.

*Sources: The Association of Electrical Equipment and Medical Imaging Manufacturers, U.S. Department of Energy, Cooperative Research Network*

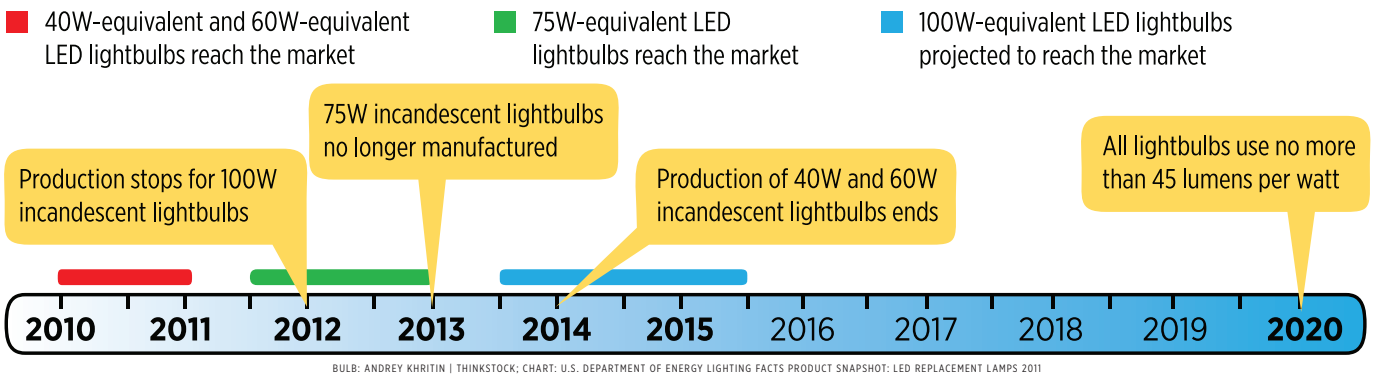
## Shedding Light on LEDs

**Curious to know if LEDs are right for you? Learn how to read LED labels at lightingfacts.com/content/consumers.**

Homeowners can visit energysavers.gov/lighting to compare LEDs to new energy-efficient incandescent bulbs and CFLs.

## LEDs: A DECADE OF CHANGE

**By 2014, lightbulbs using between 40 watts and 100 watts must consume at least 28 percent less energy than traditional incandescents, saving Americans an estimated $6 billion to $10 billion in lighting costs annually. The federal Energy Independence and Security Act of 2007 also mandated that lightbulbs become 70 percent more efficient by 2020. Light-emitting diodes, LEDs, are quickly evolving to meet this challenge. Learn more at energysavers.gov/lighting.**




BULB: ANDREY KHRITIN | THINKSTOCK; CHART: U.S. DEPARTMENT OF ENERGY LIGHTING FACTS PRODUCT SNAPSHOT: LED REPLACEMENT LAMPS 2011

NYUL | THINKSTOCK

Keep your home and family safe by properly maintaining your fireplace.

# Spruce up Your Fireplace

**If you've used your fireplace much this winter, or if it has several winters of use, it might benefit from a facelift.**

Here are some ideas for making your fireplace a glowing centerpiece of your house.

**REPLACE YOUR MANTEL.** You can order pre-cut mantels in any price range and in materials ranging from hardwood to marble to plaster. This is a weekend job for a handy do-it-yourselfer.

**CLEAN YOUR FIREPLACE AND CHIMNEY.** Wait at least a day after your last fire and shovel out the ash and unburned pieces of wood. Then sweep the interior of the fire box out. Make sure you use a metal bucket for gathering ashes in case an ember is still live.

Or, hire a chimney sweep and save yourself the trouble. Even if you're not burning wood in your old fireplace anymore, give it a good cleaning.

**CLEAN THE BRICK OR STONE THAT SURROUNDS YOUR FIREPLACE.** If the brick is sealed, most of the soot should scrub off with detergent and a cloth. Tougher stains might require a mixture of ammonia and water with a stiff-bristled brush. Test a small area first to make sure the brush doesn't damage the brick's surface and the solution doesn't discolor it. If your brick is unsealed or old, don't scrub it; instead, just sweep it.

**REPLACE YOUR WOOD-BURNING FIREPLACE WITH AN ELECTRIC MODEL.** You might feel some heat if you sit close to your wood-burning fireplace, but it's not producing enough heat to help your furnace keep the house warm. In fact, it's sucking your home's heated air right up the chimney. Consider converting that energy-inefficient fireplace to an electric version. If you haven't seen one in awhile, you'll be amazed by how realistic its "flames" look, thanks to technological advancements.