Central Alabama Electric Cooperative
A Touchstone Energy® Cooperative

Contact Us

Toll Free: 1-800-545-5735
Outage Hotline: 1-800-619-5460
www.caec.coop

Prattville Office:
1802 U.S. Hwy. 31 North
Mailing: P.O. Box 681570
Prattville, AL 36068

Clanton Office:
1601 7th St. North

Rockford Office:
9191 U.S. Hwy. 231

Wetumpka Office:
637 Coosa River Pkwy.

Trimming Future Problems

As the spring season is in full bloom, Amy and I take advantage of longer daylight hours by doing a little spring cleaning, small do-it-yourself-projects and yard work on the weekends. Oftentimes yard work includes landscaping projects that involve planting vegetation, such as trees, so as to add a spectacular visual to our yard.

With most of my career devoted to the electric utility industry, though, it's only natural for me to think of how trees impact our power lines and the ultimate effect they have on the hard work that CAEC employees undertake to keep a safe distance between high-growing vegetation and power lines in the field. That's why I prompt myself and others to be mindful of power lines when they do any type of planting.

Through our comprehensive vegetation management program (you can read more about this program on the next page), cutting/trimming trees and removing branches near power lines is a year-round maintenance process. Our vegetation management program is crucial to CAEC's goal of delivering safe and reliable electric power to our members.

An effective tree-trimming and right-of-way (ROW) maintenance plan for power lines keeps tree limbs and other obstructions away from high-voltage lines, which reduces interruptions. Properly maintained ROW keeps our crews safe when they are restoring service and maintaining our system.

Vegetation management also prevents unexpected costs to your co-op. Clear rights-of-way allow our crews to restore power more quickly than they could with poorly maintained areas — improving reliability and preventing costly repairs caused by trees or neglected vegetation, thereby reducing overtime costs.

Even with all of our efforts, we need your help to maintain a safe and reliable supply of power flowing to your home or business. Power lines are a constant part of our landscape; it's easy to forget they are around. If you notice trees or branches that might pose a risk to our power lines, let us know. And more importantly, before planting any trees, consider how tall they might grow and how wide their branches may spread. Choose tree varieties with power lines in mind. For more information, visit CAEC's web site at www.caec.coop or call 1-800-545-5735.

Thanks for your help as we work together to keep electricity safe and reliable.

Tom

Tom Stackhouse
President/CEO

CAEC's Integrated Vegetation Management Program

Plant life, namely trees, is one of the most common causes of unplanned electrical service outages – ranging from momentary interruptions to fairly longer periods without power.

Trees growing close to power lines and related equipment, such as poles and transformers, can and do cause electrical faults. They also hinder access to equipment during inspections, maintenance and operation and when emergency repairs are needed. In addition, trees in close proximity to or touching energized conductors may pose potential safety hazards to the public and to utility personnel.

Managing the growth of trees and other vegetation around our 5,000 miles of distribution lines is essential to helping ensure public safety and electric system reliability. Through a system-wide Integrated Vegetation Management (IVM) program, your cooperative is continually working to cost-effectively control trees and brush that grow into power lines. This strategic approach focuses on three specific areas: 1) Removal of problem trees inside and outside of right of way (ROW); 2) Proper and effective pruning of existing trees; and 3) Selective herbicide application. Our vegetation management program operates on a four- to five- year trimming cycle.

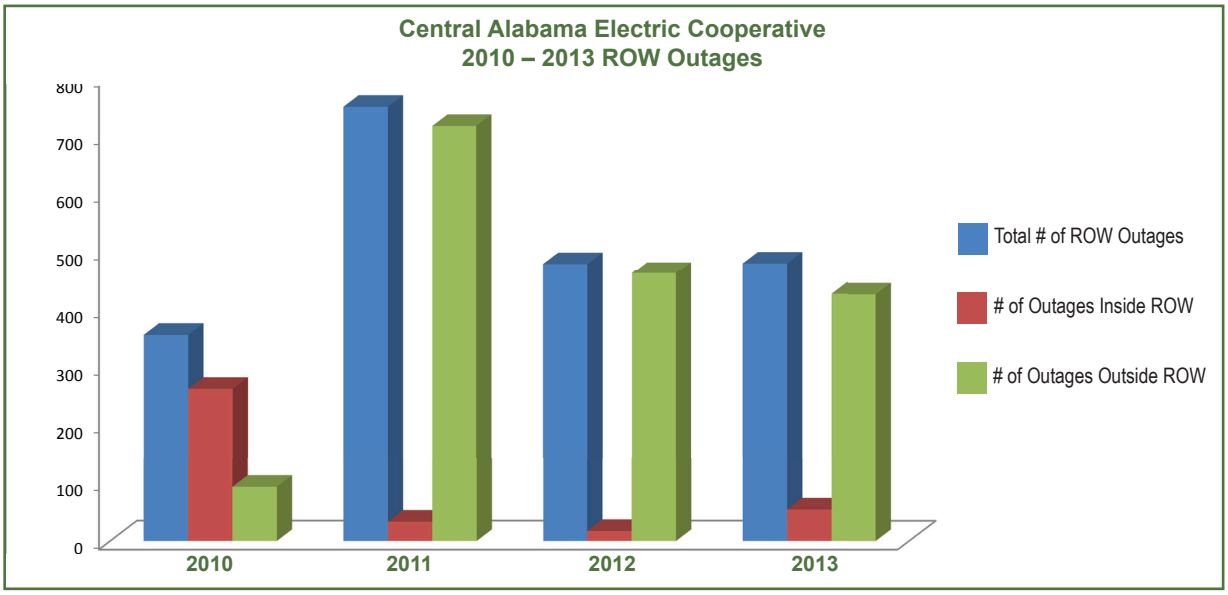
In 2013, crews trimmed 737 miles of ROW corridor for routine maintenance, applied herbicide to 1,851 miles of line ROW with a low volume herbicide to slow the growth of trees and other plant life from interfering with power equipment. Crews also cut down 3,407 trees (includes dead and dying trees) and completed 772 tree maintenance orders.

"CAEC spends approximately $2.9 million per year trimming, cutting and spraying the rights of way, an investment that contributes directly to a lower outage experience," said CAEC Utility Arborist Manager Jacoby Dennison.

Furthermore, many tree-related outages were caused by foliage outside the ROW (see chart below): 2010 – 26 percent, 2011 – 96 percent, 2012 – 96 percent and 2013 – 89 percent. To combat these outages, CAEC's IVM program was combined with a proactive approach of clearing danger trees outside the ROW.

"We will remove dead, dying, diseased or leaning trees and branches outside the easement if they threaten the safe and reliable operation of the electric system," said Dennison. With property owner participation and permission, we can address problems before they happen. Educating and communicating with members about the importance and benefits of vegetation management remains an essential part of CAEC's ROW program.

With our members' help, cooperation and assistance, many tree-related service interruptions can be avoided. Should you notice any trees or brush that need attention, contact CAEC at 1-800-545-5735.



The Bridge from Production to Your Home

As you go through your daily routines of eating, showering, etc., you probably don't think about how you're able to complete such tasks with the help of electricity. It's hard to imagine that power generated more than 150 miles away gives you the ability to complete countless activities each day with virtually no delay. This is made possible, in part, through a transmission system (or grid) which serves as a bridge between power generation and the distribution system—which in turn delivers power to your home.

As we learned recently with our detailed look at the distribution system (see the March issue of *Alabama Living*, pages 6 & 7), it takes many parts working together to make the transmission system possible. It is this grid, owned and maintained by CAEC's Generation and Transmission provider, PowerSouth, as well as transmission lines owned by Southern Company, that makes delivery of electricity possible to our members.

And it all starts at the generation plant:

Generation:

The generation of electricity begins at the power plant—where fuel sources such as coal, natural gas or hydro are used to transform water to steam by a heating process. For example, in most coal-fired power plants, chunks of coal are crushed into fine powder and are fed into a combustion unit where it is burned. Heat from the burning coal is used to generate steam which is piped throughout the plant.

Turbines/Generator:

Since steam is water in a highly pressurized state, it is sent to a turbine where the pressure causes the blades on the turbine to spin at a high rate of speed. A shaft is connected between the turbine and a generator. Inside the generator is a magnetic field which produces voltage—or electricity at approximately 15,000 volts (V). For the power needs of CAEC's members and the consumers of PowerSouth's other distribution cooperatives, it takes about 10-12 years and between $700 million and $3 billion to build just one generation plant.

Transmission Substation:

The high voltage power produced by the generator enters a transmission substation at the power plant. Inside the substation large transformers convert the generator's voltage up to extremely high voltages (115,000-500,000 V range) in order for it to travel more efficiently over the transmission lines to transmission substations and transmission step-down substations.

Transmission Lines and Poles:

Once stepped up to the appropriate voltage, the power is then placed on the transmission system which consists of lines and poles owned, wholly or jointly, by PowerSouth. PowerSouth maintains more than 2,200 miles of transmission line and more than 300 substations across Alabama and the Florida panhandle.

The planning for and siting of new transmission equipment can be a long and tedious process. It often involves a number of complex and critical environmental, reliability, economic, social and technical issues that must be examined before decisions can be made and the required permits (i.e. environmental impacts, rights-of-way) are issued. The investigation and research of each of these key areas, and the action of planning and forecasting the need and placement of transmission equipment can be a 10-20 year process and can take an additional two to five years to actually implement.

Switching Station:

Once the power reaches its delivery point, it goes through a step-down (or reduction of voltage) process at switching stations. Here, the 115,000-500,000 voltage is stepped-down to approximately 115,000-46,000 V before being sent to the first component of the distribution system—the substation – and eventually to your home.

Such a large system can take years or decades to plan and can cost millions of dollars. For example, one-mile of a 115,000 V line on the transmission grid can cost approximately $400,000—from planning and development to implementation.

When you think of the time and effort it takes, as well as the investment, to build and maintain the thousands of miles of line to deliver power to our homes, the value of electricity becomes much more apparent.

2014 Couples Conference in Orange Beach

An Educational and Fun Experience

There are many benefits of being a CAEC member, and one of them involves the cooperative principle regarding education, training and information for members. One way we help accomplish this goal is by sponsoring two member-couples to attend the annual Alabama Cooperative Council's Cooperative Couples Conference held in Orange Beach during July 21-23.

The Couples Conference serves as a forum for members to network with others from across the state and gain a unique perspective on how cooperatives affect their everyday lives.

"The most surprising information for us was how many farmer-owned dairy cooperatives there are in the U.S. and major brands such as Land O'Lakes is one of them," said 2013 participants Erick and Hollie Terry.

To be eligible, you must be a member of CAEC (past attendees are not eligible). For more information about the Alabama Cooperative Couples Conference, or to apply, call 1-800-545-5735, ext. 2213, or visit www.caec.coop.

Applications are due by June 16

CAEC Taxes Provide for the Areas We Serve

April is the month associated with filing taxes, and even though your co-op is a not-for-profit organization, we pay taxes each year as well -- taxes that benefit the communities we serve.

In 2013, CAEC contributed to regional, state and federal governments by paying more than $9.6 million in taxes. Of the $9.6 million, approximately $997,000 was paid in ad valorem taxes. The revenue from ad valorem taxes goes to school districts, volunteer fire departments and other vital services for our communities.

In addition, CAEC paid $519,000 in city business licenses and another $46,000 in state and county sales tax for the year. The sales tax is paid when CAEC buys goods and equipment.

Payroll taxes, totaling more than $2.9 million, were paid in 2013. These taxes include employer-funded state unemployment compensation as well as the social security and Medicare taxes funded by both the employee and CAEC. The co-op also paid approximately $1.8 million in gross receipt taxes and approximately $3.3 million in utility taxes.

CAEC offices will be closed April 18 in observance of Good Friday

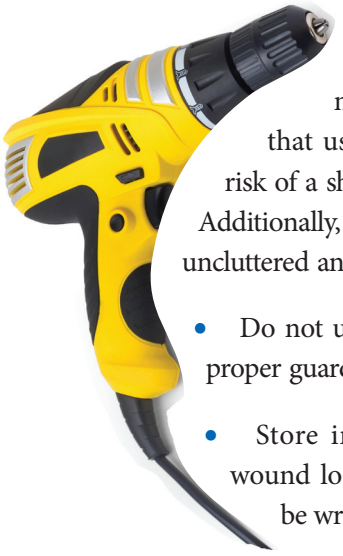
Electric-Powered Tool Safety

Darren Maddox, CAEC Training and Safety Manager

As the weather turns warmer, homeowners get anxious to start home improvement projects. Many of these do-it-yourself undertakings involve the use of electric power tools. Because of their power and the use of electricity, they present certain safety risks that users need to be aware of. Working with power tools requires instruction and training as they can be deadly if not properly used or maintained. Electrical shocks, which can lead to injuries, such as heart failure and burns, are among the major hazards associated with electric-powered tools.

Listed are some guidelines to help protect you from power tool hazards:

- Power cords are one of the most dangerous problem areas on electrical tools. Cords should be inspected frequently for fraying and other damage.
- Use ground fault circuit interrupters (GFCIs) with every power tool.
- Wear appropriate personal protective gear, such as safety eyewear, face shields, hard hats, safety shoes and insulated gloves.



- Never use tools in a damp or wet environment (unless approved for that use) which will increase the risk of a short circuit or electrocution. Additionally, make sure the work area is uncluttered and well lit.
- Do not use power tools without the proper guards and safety switches.
- Store in a dry place with cords wound loosely (a cord should never be wrapped around the tool itself) and tools that have malfunctioned should be properly labeled to prevent others from attempting to use them.
- Electric tools must have a three-wire cord with a ground and be plugged into a grounded receptacle, double insulated or be powered by a low-voltage isolation transformer which is used to convey electrical power coming from a source of alternating current (AC) power to a certain device, where the powered device is being isolated from the power source for safety measures. Double–insulated tools are identified with a square-within-a-square logo or the words "double-insulated" on the tool.

Double-Insulated Tools Identifications

Be sure the tools are distinctly marked with this symbol or clearly labeled as "DOUBLE INSULATION" or "DOUBLE INSULATED" by the manufacturer.

- Use extreme caution when cutting or drilling into walls where electrical wires or water pipes could be accidentally touched or penetrated.
- Read the tool owner's manual prior to use and operate tools within their design limitations.
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.

Power tools can be very useful and can save you a lot of work when compared to using conventional hand tools. When it comes to purchasing these tools, it is wise to spend a little more and focus on quality rather than price for your safety.

Tornadoes and severe thunderstorms can strike any time of day, even when you're sleeping, but you and your family can be better prepared with the **Touchstone Energy Weather Connection** application, made for Android devices, iPhone and other Apple products. The app helps keep you up to date on severe weather watches and warnings and uses a GPS feature to warn you of severe weather specific to your location with alerts such as beeps and text to speech.

CAEC has a limited supply of **free** download codes available for the Touchstone Energy Weather Connection Application. To reserve a free download code, contact us at (800) 545-5735.

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