Gray Bucket on the Electric Pole

MESSAGE FROM
GENERAL MANAGER AND CEO JERRY D. WILLIAMS

MOST MEMBERS HAVE A round gray bucket looking device on the top of a pole, near their home. They are called Transformers. Unlike the Transformer comic on television, this piece of equipment has no moving parts and does its job with only a slight hum. Folks will often describe a problem with electric wires as being between the house and transformer or the wires going to the transformer. Seldom do we take the time to explain exactly why the electrical transformer exists.

Most of us don't realize it, but we are surrounded with electrical transformers. The little square box plugged into an outlet and connected to a cord used to charge your phone, iPad, lap top or Kindle is a transformer. Your computer speakers, cordless land line phone (whoops-you probably tossed those), rechargeable hair trimmer etc. all use a transformer to reduce regular household electrical voltage to a much lower voltage and then convert the voltage to DC current to charge the internal battery.

Some of you may be interested in exactly how these transformers work. The concepts are actually very interesting. Once you understand how an electrical transformer works, you will understand why the gray bucket looking device on the pole near your house is important. The device on the pole is called a transformer because it uses electromagnetic induction to Transform the high voltage (14,000 volts) electricity in the wires installed alongside the road, to 120 volts that can be used inside your home to power the lights. It takes electricity of one voltage and transforms (changes) it to a different voltage. There are no moving parts and the 14,400 volt wire never touches the 120 volt wire. Cell phone chargers typically transform 120 volts to about 5 volts.

A comparison to water may be helpful to understand the concepts. Electrical Current is the flow of electrons, similar to the flow of water in a river. The difference in Electric Potential (voltage) between two points is what pushes the Current, like the difference in elevation of a river causes the water current to be more or less. A large voltage difference is like a big drop in elevation (such as a water fall) and results in a swift flow (strong current) of electrons. A small voltage difference is like a river flowing on an almost flat plain.

Your power transformer uses a process called Electromagnetic Induction, which is simply stated; a Changing Magnetic Field will create an Electric Potential that compels an Electrical Current to flow, and flowing Electric Current generates a Magnetic Field. Many of you have created a simple magnetic field (that does not change) by wrapping some wire around a large iron nail and connecting each end of the wire to a DC battery. Similarly, if a changing magnetic field flows through the center of a coiled wire, a voltage is generated in the wire, which causes an electrical current to flow. Think of the large nail being bent into a square or ring and a wire wrapped around one side, and hook the coil of wire to AC current. Because the AC current is alternating, the magnetism in the nail is also alternating. Add a second coil of wire around the opposite side of the nail. The alternating current (AC) on the first coil creates a changing magnetic field on the opposite side of the nail and induces an electrical current to flow in the second coil of wire. Because the iron nail is magnetically permeable, the magnetic field is almost entirely contained in the iron nail. The iron nail guides the magnetic field around to the opposite side and through the center of the opposite coil of wire.

The electrical potential (voltage) or the hill generated in a coil of wire by a changing magnetic field through its center increases with the number of turns of wire. This allows the output voltage to be specific, based on the number of turns of wire in each coil. We call this a conventional transformer that uses two coils of wire and what is called "soft" iron for a core. The input coil we call the primary and the output coil we call the secondary coil. The primary coil of wire is connected to the 14,400 volt wire attached to the insulator on top of the pole. The secondary coil is connected to the 120 volt wires leading to the house. At the manufacture the secondary voltage can be different, based on the number of coils around the iron core. There is no electrical connection between the two coils. However, they are connected by the magneticfield in the iron core. This same fundamental concept is used for cell phone charges and the gray bucket looking transformer on the utility pole.

Here is some Texas trivia. All transformers mounted on poles are painted the exact same color. This color is known as "Lady Bird Blue". President Johnson's wife pushed to beautify the highways and at the time, many electrical transformers were painted to match the owner's corporate color. She and the President were so persistent at beautification (including the sky line) that for many years most transformer and insulator manufacturers were under the impression the 1965 Highway Act required the switch to the gray color to match the sky. The color stuck but was never a part of the federal law.

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Youth Tour Application Deadline Is February 10

EVERY YEAR, Lamar Electric Cooperative selects two high school students to attend an all-expenses-paid tour of Washington, D.C., which includes visiting the U.S. Capitol and meeting members of Congress.

Eligible students must be in 10th, 11th or 12th grade and live full time in a residence served by Lamar Electric or attend one of the four high schools served by the co-op: Prairiland, Roxton, Detroit and Faith Christian. Home-schooled students served by Lamar Electric also are eligible.

Applications must be complete, with a three-page typed essay titled, "How will electrical needs be met in the future?" and submitted to Lamar Electric no later than 5 p.m., February 10. Applications are available at www.lamarelectric.coop. Submit by email to dctrip@lamarelectric.coop, or in person at 1485 N. Main St. in Paris. It's that easy!

Learn more about the Government-in-Action Youth Tour at lamarelectric.coop by clicking on the Youth Programs tab.

LAMAR ELECTRIC COOPERATIVE 2017 YOUTH TOUR APPLICATION

DEADLINE: FEBRUARY 10

NAME _____

PHONE NUMBER _____

EMAIL ADDRESS _____

PARENT(S)'/GUARDIAN(S)' NAME(S) _____

_____

ADDRESS _____

_____

NAME OF HIGH SCHOOL _____

LAMAR ELECTRIC ACCOUNT NO. _____

Applicants hereby acknowledge that the application essay becomes the property of Lamar Electric Cooperative and may be published.

SIGNATURE _____ DATE _____

Lamar Electric Cooperative

1485 N. Main St. • P.O. Box 580
Paris, TX 75461

GENERAL MANAGER AND CEO

Jerry D. Williams

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Member Benefits

- Level billing
- Automated meter reading
- Free bank draft service
- E-Bill
- Visa and MasterCard accepted

Your Local Pages

This section of *Texas Co-op Power* is produced by LEC each month to provide you with information about current events, safety, special programs and other activities of the cooperative. If you have any comments or suggestions, please contact the local office.

CONTACT US

CALL US
(903) 784-4303 local or
1-800-782-9010 toll-free

FIND US ON THE WEB
www.lamarelectric.coop

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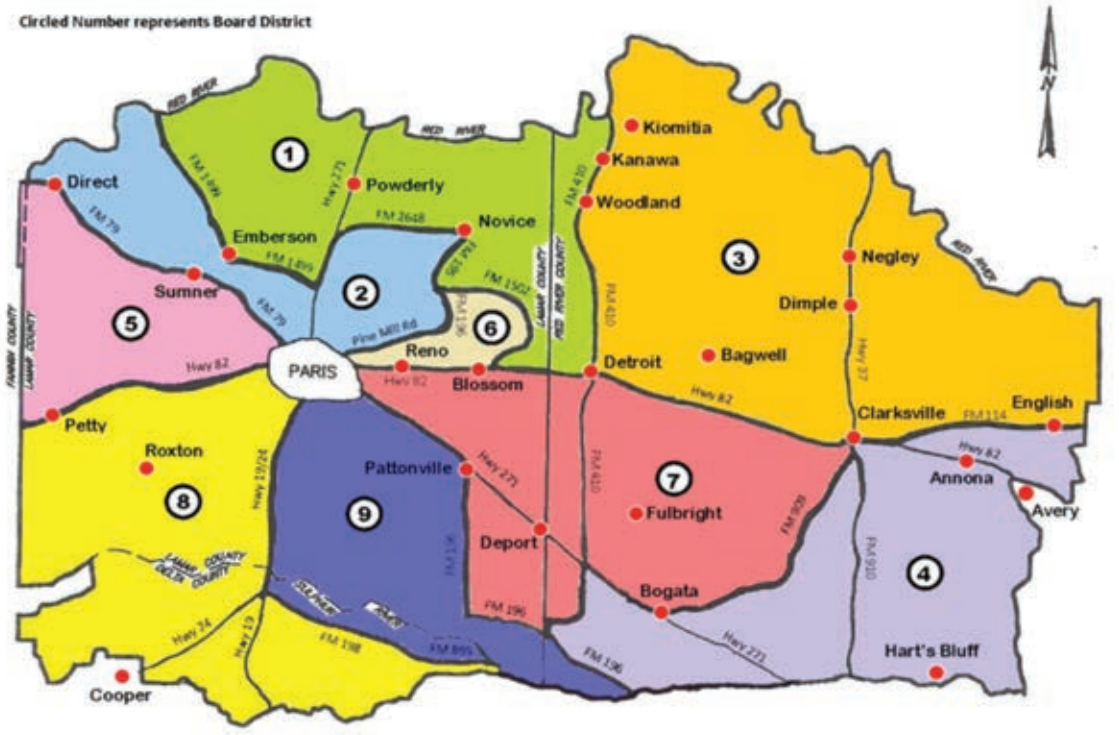
SAVE THE DATE!

Annual Meeting Set for April 22

THREE POSITIONS ON THE LAMAR ELECTRIC COOPERATIVE Board of Directors are up for election each year. This year, districts 1, 8 and 9 will vote at the annual meeting. Any member residing in districts 1, 8 or 9 who wishes to be a candidate for one of the three available board positions must appear in person at the main office of the cooperative to fill out a nomination form by February 21, as outlined in t he co-op's bylaws. If you are unsure of the district in which you live, please refer to the district map.

Lamar Electric will hold its annual meeting at 10 a.m., Saturday, April 22, at Paris Junior High School, 2400 Jefferson Road in Paris. Qualifications for board members are specified in the Lamar Electric bylaws. The qualification portion of the bylaws was published last month in this magazine. A copy of the bylaws is available at the Lamar Electric office and can be found on the website at www.lamarelectric.coop. If you have any questions, call Katie Morris at (903) 783-4949.



THE POWER IS IN YOUR HANDS

Prepaid Metering Coming Soon

LAMAR ELECTRIC is now testing a new option for residential members. Prepaid metering is as simple as it sounds: Consumers pay for electricity before it is used, then use the electricity until the credit is depleted. With normal metering, you get a bill after you have used the electricity. Prepaid metering is a daily calculation of your electric usage.

There's no difference in the electricity service you receive—just in HOW and WHEN you pay for it. When you sign up, you pay as often and as much as you'd like. No deposit or credit check is required!

The option to switch to prepaid metering will be coming soon. Be sure to read next month's *Texas Co-op Power* for an update. To learn more, give a member services representative a call at (903) 784-4303.

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Academic Scholarships Available

THIS YEAR, LAMAR ELECTRIC will award six $1,000 academic scholarships to students who plan to pursue an academic degree or certification from an accredited university, college, junior college, technical school or other postsecondary educational institution. Scholarship payment will be made directly to the college, university or school in one lump sum. Scholarships must be used within two years of the award date. Funds may be used for tuition, books, and room and board.

Eligibility Requirements

To be considered for a Lamar Electric scholarship, a student must:

- Live full time in a residence served by Lamar Electric Cooperative; and
- Be a graduating senior attending a high school or an accredited home extended studies program within the counties served by Lamar Electric.

Six scholarships will be given away at the Lamar Electric Cooperative Annual Meeting, April 22, in a random drawing of qualified students. The winners need not be present.

The entry deadline is April 7. The application can be found at www.lamarelectric.coop. Once the application is completed, simply email it to scholarship@lamarelectric.coop. You also may fill out the application below and mail it to:

Lamar Electric Cooperative
Attn: Katie Morris
P.O Box 580, Paris, TX 75461.

DEBBI SMIRNOFF | ISTOCK.COM

LAMAR ELECTRIC COOPERATIVE 2017 SCHOLARSHIP APPLICATION

DEADLINE: APRIL 7

NAME _____

ADDRESS _____

_____

NAME OF HIGH SCHOOL _____

PARENT(S)/GUARDIAN(S) NAME(S) _____

_____

LAMAR ELECTRIC ACCOUNT NO. _____

PHONE NUMBER _____

RECIPE OF THE MONTH

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Honey Cheese Bacon Chicken

4 boneless, skinless chicken breast halves
¾ cup honey
½ cup Dijon or creole mustard
¼ teaspoon lemon pepper, or more to taste
4 slices bacon, cut in half
1 cup shredded mozzarella or provolone cheese

1. Preheat oven to 375 degrees. Apply cooking spray to a metal baking dish. Pound chicken breast halves to an even thickness.
2. Mix together honey, mustard and lemon pepper in a small dish. Place the breast halves in baking dish and drizzle evenly with the honey-mustard mixture.
3. Bake chicken 25 minutes, then top each breast half with 2 bacon pieces and increase oven heat to 400. Continue baking about 7–8 minutes.
4. Top with cheese and bake another 3 minutes or until chicken juices run clear, bacon is crisp and cheese is bubbly. Serve with brown or white rice.

This recipe won the *Five Ingredients or Fewer* contest in September 2015. Submit your *Texas Gulf Shrimp* recipe to *Texas Co-op Power* by February 10 for a chance to win $100 and be published. Visit texascooppower.com/contests.

Find this and more delicious recipes online at
TEXASCOOPPOWER.COM