



MESSAGE
FROM
GENERAL
MANAGER
AND CEO

JERRY D.
WILLIAMS

Why Are There Outages?

WHAT MAY SEEM like an obvious answer to the question of why outages occur may not be so obvious to others. The short answer is; we live in the rural wooded area of North Texas. This results in a lot of tree issues, lightning and squirrels.

Perhaps some numbers will help explain why *Where* we live has so much to do with *Why* we have outages. Lamar Electric has about 2,400 miles of high voltage distribution power lines. Those power lines are scattered out over about 2,100 square miles. For reference, 2,100 square miles is about three times the size of the cities of Dallas & Fort Worth put together. Most of our power lines are overhead and are operated at either 14,400 or 7,200 volts. We serve about 12,800 meters. This means there are a little over 5 electric meters per mile of line or 6 meters per square mile. That compares to Oncor that averages over 50 electric meters per mile of line.

Most right-of-ways are 30 feet wide, with one half on each side of the line. This means a clearing of only 15 feet between the power line and the tree line. Within 10 feet of the tree line, there are typically 20 trees at least 40 feet tall along an area of approximately 100 feet. The power line is about 29 feet above the ground. That equates to 1,056 trees within striking distance of the power lines every mile. Of course, about 20% of the power line borders pasture or other cleared areas. That leaves around 2 million trees within striking distance of the power lines (if you assume only one side has trees). That number can easily be tripled if you count trees that are further than 25 feet from the line that may be 60 or more feet high.

Trees tend to support each other as they are blown around in the wind. All things being equal, trees that are close to the clearing tend to fall toward the cleared out right-of-way. The high voltage power lines are attached to a glass insulator at each pole, but the wire is bare. When a tree top or limb hits the power line, a fault is created and either a fuse will blow or a breaker will open. Depending on how much sap is in the tree or how much moisture is in the limb, the pathway to ground could be such that the fuse does not blow or the breaker may open and reclose, leaving a lethal situation to stay away from.

There are a series of breakers on the high voltage power lines, just as you typically have a 200 amp

main breaker in your breaker box, which leads to smaller breakers that supply power to individual rooms in your house. A major power line breaker may lead to several small communities. Smaller breakers are located where a tap that serves an entire community connects to the major line, and yet smaller breakers may be located a few miles further down the line. Typically, a fuse will be located where a power line serving 5-6 houses is connected to the main line.

Unlike the breakers in your home, all these high voltage (14,400 or 7,200 volts) breakers have the ability to automatically reset, up to three times. This allows a tree top or object to brush the line while falling in the clear and result in a momentary blink. This ability to reset also allows lightning to strike the power line, go to ground then turn your power back on. The good news is this prevents a lot of lightning from entering your house. The bad news is blinking lights during lightning storms. Of course, if the lightning strikes closer to your home, a tap fuse or transformer fuse or both are likely to blow. That means an outage until someone physically replaces the fuses.

Texas is usually one of the top three states for lightning, and our area along the Red River is some of the worst in the state. It is not uncommon for fuses to be blown at 40 different locations as a thunderstorm blows through. It takes time to get to each location, remove the fuse barrel from the top of the pole, install a new fuse and put it back into the bracket at the top of the pole.

At Lamar Electric, lightning causes about 35% of all outages, with trees causing about 25%. The trees & tree limbs typically cause more people to go off at a time and for a longer outage, while lightning will involve more locations, but less people per event. A tree top may fall across the power line causing 100 people to be out of power, whereas lightning will likely blow a tap fuse causing 10 people to be out. Depending on the situation a tree may break a pole causing a lengthy outage, while replacing a tap fuse may only take a few minutes after arriving at the scene.

As storms move through the area, there is always a balancing act going on to restore outages. Often times the outages occur at different times as the storm moves through. A crew can be in the middle of working on one outage, when a larger outage

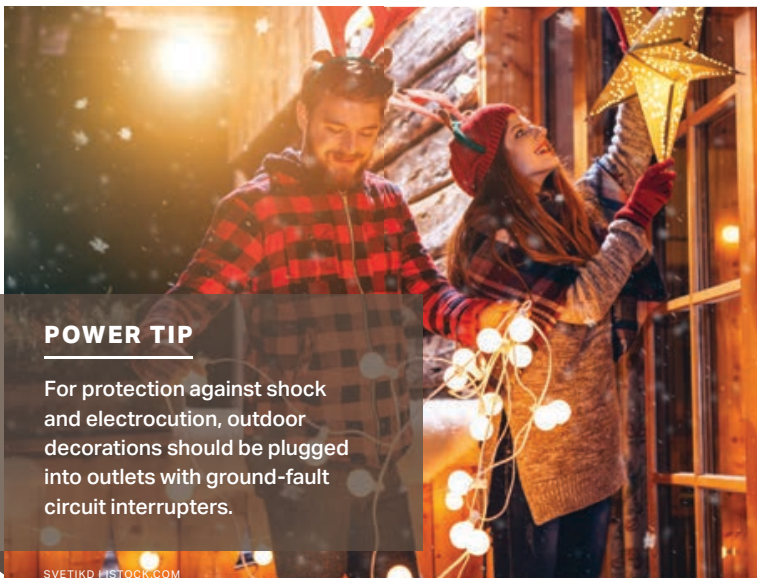
occurs. Finishing the first outage is most likely the right answer, but not always. An attempt is always made to work on outages that affect the most people, while taking into account things like nursing homes and life support individuals.

Some folks wonder why there are outages when the sun is out, no wind and otherwise a beautiful day. Many times, these outages are caused by small animals. Generally the squirrels start moving in late summer and in the fall. As the squirrel activity picks up, so do the blown fuses, because squirrels like to sit on top of transformers and their long tail has a tendency to find energized parts. Lamar Electric started using squirrel boots and insulated jumper wires over 15 years ago, but we still have thousands of transformers without them. Small animals like squirrels and birds account for 22% of our outages.

A squirrel or bird that gets into the wrong place on a CSP transformer can cause several people to be out of power. Many years ago all residential transformers were Completely Self Protected or CSP. The CSP transformers began being phased out over 20 years ago, but there are still thousands of CSP transformers in service. The CSP transformer has an internal primary fuse and an internal breaker on the load side. Because of this, there is no external fuse located above the transformer on the pole, like conventional transformers. A squirrel that touches the high voltage jumper wire will cause the first up-line fuse to blow and often this tap fuse serves 5-10 houses. Currently we are trying to add a fuse and insulated jumper wire above these transformers, but the task is time consuming and expensive.

The plastic covering that goes around the high voltage bushing on top of the transformer also covers the jumper connection point. Originally they were made of soft rubber and slid down the jumper wire to cover the bushing. That is how they became known as squirrel boots.

The bottom line is we live in an area with a lot of lightning. We also live around a lot of beautiful trees that can wreak havoc with power lines. Those trees are home for a lot of wildlife, especially squirrels. Those three items are responsible for 82% of all the Lamar Electric outages. The other 18% consists of equipment failures, automobile accidents, agriculture implements hanging guy wires, weekend tree cutters etc. As your local electric cooperative Lamar Electric will keep striving to reduce outages using new technology like improved lightning arrestors, dead tree patrols, insulated jumpers and squirrel boots. ■



POWER TIP

For protection against shock and electrocution, outdoor decorations should be plugged into outlets with ground-fault circuit interrupters.

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For information and to report outages, please call us.

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TEXAS CO-OP POWER

Lamar Electric provides *Texas Co-op Power* and *TexasCoopPower.com* to give you information about events, safety, special programs and other activities of your cooperative. If you have any comments or suggestions, please contact the co-op office.

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THE TRIP OF A LIFETIME

GOVERNMENT-IN-ACTION
**YOUTH
TOUR**

JUNE 13-22, 2021



Apply for Youth Tour Today

EACH YEAR, LAMAR Electric Cooperative selects two high school students to attend the Government-in-Action Youth Tour, an all-expenses-paid trip to Washington, D.C., where participants tour the U.S. Capitol, meet members of Congress, and visit many monuments and museums.

To be 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 three high schools served by the co-op: Prairiland, Detroit and Faith Christian. Home-schooled students served by Lamar Electric are also eligible. Applications must be complete, with a three-page typed essay. This year’s essay topic is, “Should electric linemen be considered first responders? Why or why not?” The essay must be submitted to Lamar Electric no later than 5 p.m. Friday, February 5.

Download an application from our website, lamarelectric.coop, or use the one below. Submit by email to dctrip@lamarelectric.coop or in person at 1485 N. Main St. in Paris. It’s that easy! Learn more about Youth Tour at lamarelectric.coop by clicking on Government-in-Action Youth Tour under the Youth tab on the homepage. ■

**LAMAR ELECTRIC COOPERATIVE
2021 YOUTH TOUR APPLICATION**

DEADLINE: FEBRUARY 5

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 _____

Are you a Texas high school student? Would you like to travel to Washington, D.C., and visit historic landmarks—all without spending a dime of your own money?

Perhaps you’d like to meet elected officials, or maybe you’re looking for an inspirational experience in the company of other Texas teens. If that sounds like you, then the Government-in-Action Youth Tour is your tour. Apply now!



Start your adventure at
TexasYouthTour.com.

Merry Christmas

"Glory to God in the highest, and on
earth peace, goodwill toward men."
Luke 2:14

The offices of Lamar Electric will
be closed December 24–25 and
January 1 for the holidays.

