

BURT COUNTY

PUBLIC POWER

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It's Your Power!



Alphabet Soup: What are GFCIs and AFCIs?

We have probably all heard the terms GFCI and AFCI when it comes to electrical safety, but what do the letters stand for? And how do these letter-heavy, acronym-named devices help keep us safe?

GFCIS

GFCIs, or ground fault circuit interrupters, help protect against electrical shock and electrocution. It is important to test and reset the red outlet (GFCI) buttons monthly to ensure they are working properly. GFCIs are typically installed in outlets or circuits close to water sources in and outside of the home.

When they are in working order, GFCIs help prevent shock by detecting current variations along the electrical path. If a person's body starts to receive a shock, the GFCI senses this and cuts off the power.

According to the National Electric Code, a "ground fault" is a conducting connection (whether intentional or accidental) between any electric conductor and any conducting material that is grounded or that may become grounded.

In other words, a ground fault happens when an electrical circuit malfunctions, causing the electrical current to seek a path to ground other than via the intended wires. A human or animal in the wrong place at the wrong time could become that "path to ground" or conduit of electricity.

AFCIs

AFCIs, or arc fault circuit interrupters, are required by the National Electrical Code for some, but not all, electrical circuits in the home. The device breaks the circuit when it determines a dangerous electrical arc, which is a discharge between two electrodes that can cause intense heat or light. As you can imagine, the extreme heat of an arc can cause a fire, so that is why AFCIs are required by code.

Most people associate arcs with welding, but they can happen in the home or when the conductors on a power line are interrupted, such as when a tree falls in it or a car strikes a utility pole and the line falls.

Much like a GFCI is to a ground fault, the AFCI breaks the circuit when it detects an arc or abnormalities in the flow of electricity. That safeguard or break in circuit helps prevent a fire or other arc-related electrical damage. The temperatures of an arc can exceed 10,000 degrees.

An AFCI can distinguish between insignificant, harmless arcs and the undesirable kind that could start a fire or cause damage. Benign or uneventful arcs can be an everyday byproduct of using switches and plugs in good working order.

What are arcs and ground faults, again?

So, in review, an arc fault is the unintended result of current flowing through an unplanned path. A significant arc can cause burning particles that can easily ignite the materials around it (drywall, insulation, wood).

And a ground fault? A ground fault happens when stray electricity takes an unintentional pathway and the current flows directly to the earth (to the ground). The result, if you become part of that path, could be shock or electrocution.

For more information about electrical safety, visit SafeElectricity.org.

Burt's Briefs

Our office will be closed Friday, July 3rd in observation of Independence Day. In case of emergency, please call our toll free number 1-888-835-1620. Thank you!

Remember to support your local county 4-H clubs by attending the county fairs.

Call Digger's Hotline (1-800-331-5666) 48 hours before you begin digging. Make sure you know the location of buried electrical lines.

Contact our office before pruning, trimming, or cutting down trees that are near overhead electric lines. Have a professional trim your trees when near electrical lines.

Electrical outlets are for electric plugs only, and should be weatherproof and protected by a GFCI (ground fault circuit interrupter) on all outside locations.

Hot weather is here again and temperatures are beginning to soar. Please remember not to lock your pets in your car during these hot summer months. Even with the windows rolled down, the temperature inside can soar to 160 degrees.



Be SMART Around Electricity: Inside Your Home

Many safety hazards are obvious and can be seen, smelled or heard: that wrinkled rug you could trip on, spoiled food that could make you sick, icy pavement that could cause a nasty fall, or a weather siren announcing an impending tornado.

Electrical hazards, however, are often undetectable. While some you can see, smell or feel, (outlets that are warm to the touch or lights that constantly flicker, for example), many others you cannot.

Burt County public Power and Safe Electricity remind you of these electrical safety tips to keep in mind in and around your home:

- **Cell phones make strange bedfellows:** Do not sleep or lounge in bed with a cell phone or other device that is charging: This can cause burns to your skin or it can cause the soft bedding materials to ignite. This also goes for devices that are warm to the touch but not plugged in.
- **Do not use cheap chargers:** Instead, use the original charging components that came with your cell phone or other electronics. When it comes time to replace them, spend a little extra to buy brand-specific chargers and cubes. Using cheaply made generic chargers with your electronics can cause injury (shock/burns) or even a fire since they may be defective.
- **Charging devices and water don't mix:** Do not use a plugged in (charging) cell phone near water. **Take a break from your phone while bathing.** Deaths have occurred when a plugged-in cell phone has fallen into the bathtub. **DO NOT** use plugged in items near water.
- **Do not overload outlets or circuits.** It's tempting to plug in several items in one outlet or on one circuit, but drawing too much power can damage your electronics on your home's wiring, or cause more serious problems such as a fire. If too much current is drawn, usually a circuit breaker would trip or fuses would blow, but this is never guaranteed.
- **Do not use portable heaters unattended** or around small children or pets. Do not place flammable items near a space heater.
- **Ditch that old electric blanket:** Do not use an electric blanket that is 10 years old or older or one that has frayed or visible wires in the blanket itself. Do not use one that has a damaged electrical cord or plug.
- **Test your GFCI buttons once a month:** Put a reminder your phone or mark it on your calendar each month. GFCIs help prevent ground faults that can shock or injure you, but they can't do their job if they are not working properly.
- **Do not ignore odd electrical symptoms in your home.** If your lights flicker often, if your outlets are warm to the touch, or if you smell odors like something is overheating but can't determine where the odors are coming from, there may be problems with your home's electricals. There might also be a problem if your circuits or fuses need to be tripped or changed often. If you notice any of these symptoms or other unusual electrical oddities in your home, have a qualified electrician assess your home's electrical system.
- **Is your home AFCI protected?** AFCI stands for arc fault circuit interrupter, and when there is an arc fault, it means that an electrical source in your home is malfunctioning. When that happens, an arc (intense heat or light) can be discharged. Because of that, AFCIs are required by National Electric Code since they help prevent home fires. Have a professional electrician assess your home to make sure AFCIs are installed, especially if your home is older. He or she can also inspect your older home's wiring to make sure it can handle today's electrical demands.
- **Babyproof and childproof your home, including electrical sources.** There are many everyday electrical dangers that toddlers and children can tamper with, such as exposed outlets, accessible power strips and surge protectors, and hanging or dangling cords. In addition, little ones like to imitate you, and there have been reports of toddlers trying to plug in the wrong end of a phone charger into the outlet, which can cause severe shocks or burns. Be aware of the potential electrical dangers throughout the home. Get down on the floor and see what's at eye level or within reach.

Tamper-resistant outlets became part of the National Electric Code in 2008, but many homes built before that year do not have them. Make sure all of your outlets are covered (with a plastic plug, for example) so that small children cannot insert foreign objects into the slots.

For more information about electrical safety, visit SafeElectricity.org.



Common Electrical Terms:

Conductors, Ohms, Path to Ground and Other Buzz Words Defined

If you work with electricity for a living or you paid attention during junior high or high school science unit that covered ohms, currents and connectivity, you will know every term listed here.

This article is for the rest of us: everyday people who scratch their heads every time they hear the word ohm (unless they are mediating of course, softly chanting oohhhhhhhmmmm as they put their index fingers on top of their thumbs and slowly pull their arms outward).

Here are some common electrical terms and their basic definitions:

Path to ground: Electricity likes to take the easiest path. If electricity's usual path is interrupted, the current will take the new path. If that path is a person, electrical current will shock or kill as it runs through the body, since the body has become part of the electrical circuit or pathway.

Ground literally means the earth or ground in the term "path to ground" because electrical circuits can be connected to the ground. A **ground wire** is a wire that has been intentionally connected to the earth but does not typically carry electricity, although it can if the system detects a problem.

Ground fault: This is when an electrical circuit malfunctions and finds a path to ground outside the established path. When there is a ground fault, a human in contact with the wiring may suddenly become part of the pathway to ground.

Voltage: Voltage, which is measured in volts, is what makes electric charges move. Industry professionals often liken electricity to an invisible fluid that moves through some materials better than others while doing its job. To expand on this analogy, voltage would be the pressure needed to move the fluid along. No voltage (pressure), no movement of electricity (fluid).

Current: Measured in amperes (amps), current is the amount of electricity that is moving through the path as pushed by voltage (pressure). Continuing with the fluid analogy, current can be thought of as flow.

Circuit: This is an electrical pathway in which electricity enters and exits. Your home's electrical system/wiring has different circuits. Several devices that don't draw much power (a lamp or clock, for instance) can be plugged into the same circuit, while large appliances that draw a lot of power are usually placed on their own circuit.

Ohm: This is a unit used to measure electrical resistance. **Resistance** measures how much an object (like a wire) resists the current moving through it. Other ways to think of it (fluid analogy again): a water pipe with a lot of buildup would have higher resistance than a clean pipe; a small pipe would have higher resistance than a large pipe.

GFCI: This stands for ground fault circuit interrupters, and they help protect against electrical shock and electrocution as long as they are working properly. GFCIs detect whether electricity is staying inside the circuit or leaking out somewhere else (like through you). It's a good idea to test them monthly.

Arc: An arc is a discharge between two electrodes that can cause intense heat or light. Lightning is a big arc.

AFCI: This acronym stands for arc fault circuit interrupters, and they break the circuit when they sense a dangerous electrical arc. AFCIs are more sensitive to arc faults than regular circuit breakers.

Step potential: As its name implies, it is the potential for a person to step from one voltage to another, which can cause electro-

cution. When there is stray electrical current running through the ground from a downed power line or other electrical source, it often spreads like ripples on a pond, and each ripple represents a different voltage. This happens because the electricity going into the ground is not limited to just where the wire touches. The ground resists the flow, which can cause a "pool" of electricity to form. When you step in it, you give it another path to take.

Watt: Simply put, a watt is a unit of power, named after James Watt, who invented the steam engine.

Joule: Simply put, a joule is a unit of work or energy.

Conductor: This is anything electricity can go through.

Non-conductor: This is anything that is really bad at conducting electricity, like most plastics and rubber (although everyday rubber-soled shoes may not protect you). Non-conductors are also called **insulators**.

One last definition: **electrical safety**. At **Burt County Public Power**, safety is our TOP priority: your safety and the safety of our employees. Since electricity is invisible, people often forget to respect its potential for danger.

Please respect electricity. Always be aware of power line locations when working or playing outside, and always assume a downed power line is live and NEVER go near one. If you are in a car accident involving a downed line, stay in your car (unless it's on fire) and call 9-1-1 to report the accident and the downed lines. Along with first responders, our crew will be dispatched to de-energize the lines.

For more information about electrical safety, visit SafeElectricity.org.

WHEN TO CALL IT

Between 2006 and 2018, 396 people were struck and killed by lightning in the U.S.

62% Two-thirds of the fatalities happened during outdoor leisure activities.

Outdoor sports accounted for 13% of lightning-related deaths.

TOP SPORTS-RELATED LIGHTNING FATALITIES

1) Soccer	38%
2) Golf	31%
3) Running	16%
4) Baseball	9%
5) Football	3%
6) Disc Golf	3%

70% of the fatalities occurred in June, July, or August.

Have a GAME PLAN to stay safe when severe weather STRIKES.

1. Check weather forecasts in advance.
2. At first signs of stormy weather, seek shelter in a hard-top car or four-sided building.
3. Do not seek shelter under a pavilion or tree.
4. Do not sit on or lean against metal (e.g. bleachers, fencing).
5. Before resuming activities, WAIT at least 30 MINUTES after the last rumble of thunder.

SafeElectricity.org

Source: National Lightning Safety Council

Nebraska Extension News

By Kathleen Cue , Extension Educator

Trees and Galls

At this time of year, people are asking “What are these things growing on my tree?” Known as galls, these odd structures are made up of plant tissue, forming in response to the saliva of mites or small insects as they feed. Galls may or may not need monitoring based on where the galls are located on trees.

Ash Flower Gall

The male flowers of white ash are prone to invasion by the ash flower gall mite. Flowers will develop into bright green brocoli-like growths. Flower galls eventually age to dry brown clusters that remain in trees until they break away. The formation of galls prevents the male flowers from producing pollen, which is a good thing if you're an allergy sufferer or don't want the female ash trees producing lots of seed. Treatment is not necessary to control the ash flower gall mite and trees remain healthy.

Maple Bladder Gall

Bright green nubs, just 1/8” across, form on the upper surface of silver and red maple trees. The galls eventually turn red and then blacken in the fall. Maple bladder galls occur every year, with their numbers high or low depending on the weather. In some years, the galls are so numerous on a leaf that the extra weight causes leaf drop. The galls themselves are actually made up of leaf tissue, with one mite for each gall. The gall serves as the mite's home and food source. Once tree owners notice galls, spraying a miticide is ineffective because of the protection the leaf tissue provides to the mite. Maple trees are vastly oblivious to the presence of mites. Galls will continue to photosynthesize, providing sugars to the tree.

Linden Spindle Gall

Of all the potential problems lindens can have, their tubular-shaped leaf gall is the least of them. Spindle galls are caused by the eriophyid mite. Like the maple bladder gall, the mite's saliva initiates a response in plants where they increase the size and number of leaf cells, which then grown over and encapsulate the mite. Since no real harm comes to linden trees from the spindle gall mite, treatment is not necessary.

Hackberry Nipple Gall

That hackberry is one tough native tree is undisputed. Every year, the undersides of leaves display barrel-shaped galls, caused by a psyllid, otherwise known as jumping plant lice. While the number of galls on leaves can be alarming, no harm is caused and treatment is not necessary.

Oak Bullet Gall

Any time galls form on twigs and branches, the potential for long term damage increases. Gall formation on leaves is temporary, when autumn's leaf shed rids trees of mites and insects. In the case of oak bullet gall, however, gall formation is on the perennial parts of the tree, in this case the twigs and small branches. Galls, the result of feeding by the cynipid wasp, grow primarily on bur and swamp white oak. Initially galls are green, gradually darkening to brown and remaining on the tree long after the adult has emerged. Older, well-established trees really aren't harmed by oak bullet galls, but young and newly-planted trees can have branch dieback if there are a large number of galls. Trees that are planted correctly and thriving will have fewer detrimental effects from oak bullet galls. Hanging feeders near young trees will attract birds to eat these non-stinging wasps. Pruning out heavily

Burt County Public Power District News

Tekamah, Nebraska 68061
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Meetings

In accordance with Nebraska Statute, notice is hereby given that the regular meetings of the Board of Directors of the Burt County Public Power District are held on the 1st Thursday of each month, commencing at 9:30 A.M. at the district office located in Tekamah, Nebraska. In the event that a holiday falls on the said 1st Thursday, the meeting date shall be as set by the Board of Directors and published in the Legal Notice.

An agenda for each regular meeting of the board is available for public inspection during business hours at least three (3) days prior to each meeting; provided however, that the Board of Directors shall have the right to modify the said agenda to include items of an emergency nature.

Office Hours

7:30 A.M. to 4:00 P.M.

infested branches and then burning, burying or chipping them will decrease wasp numbers.

Willow Pine Cone Gall

The pine cone gall is more of a curiosity than a problem. Cone-like growths form on the ends of willow twigs. Formation stems from the activity of the gall gnat midge. Masquerading as a pine cone on a willow, the galls are green and scaly, developing fuzziness as they age. Treatment for the gall gnat midge is not necessary. Galls may be removed if tree owners find them offensive or they can be left on the tree to showcase their quirkiness.

The number and variety of galls found in our landscapes are closely associated with the weather and how conducive it is to gall-producing populations. For some growing seasons, the incidence of galls is low and in others very high. In most cases, gall formation on leaves is of little concern, while those affecting the twigs, branches and stems merit closer monitoring.

