



Electrical safety



PowerHouse

Presented by



Few things improve our lives more than the electricity we use every day. At the flip of a switch or the push of a button, it's always there to help make our homes more comfortable and secure. It's easy to take the comforts of electricity for granted — but taking its dangers for granted can be deadly.

We want to help you get the most value from your energy, and that includes helping you use it safely.

In this brochure, you'll find great tips on:

- Checking your home's wiring and circuit panel
- Using appliances safely
- Staying safe indoors and out

Read on to learn more about playing it safe around electricity!



How electricity works

Before learning how to keep your home safe, it's important to understand why:

- Electricity always tries to find the easiest path to the ground.
- Electricity flows easily through water.
- The human body is 70 percent water.

These three facts add up to a very dangerous situation for anyone who gets too close to an electrical current. Many people think if they are shocked, they can pull away and not get hurt. But electricity travels at the speed of light, so a person has virtually no chance of pulling away without injury. Electricity can also jump through the air to find the easiest path to the ground, so injuries can occur even if no direct contact is made.

An electric shock affects the body in several ways:

- Muscle contractions lock the victim into the circuit.
- Chest muscles contract, causing difficulty breathing and unconsciousness.
- Heartbeat is interrupted and veins are constricted.
- Burns occur at the entrance and exit points of the current.
- Partial or total paralysis can occur.



How electricity works - continued

If an electrical emergency occurs, it's important to know how to respond without getting hurt yourself.

- Do not touch the victim until the circuit has been turned off — unplug the appliance from the outlet or turn off the power at the fuse box or circuit breaker first.
- Call 911, making sure to tell the dispatcher it is an electrical accident.
- If you're sure the circuit has been turned off, administer first aid (CPR or mouth-to-mouth resuscitation, if you are certified).
- Always seek medical help for an electrical contact accident. Electricity burns from the inside out, so some injuries might not be visible; your heart also can be affected several hours after the contact.

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Is your home safe?

The first steps in making your home safe is knowing how the electrical system works and assessing the condition of the wiring.

Circuit breakers and fuse boxes

Take a few minutes to look at your home's fuse box or circuit panel (usually located in a metal box on an outside wall near the electric meter). Each fuse or switch controls the electricity flowing through a specific area of your home. If too much electricity flows into a circuit, the fuse or breaker automatically creates a gap in the circuit to help prevent damage to the entire system.

- Make sure all breakers or fuses are labeled clearly so you know which circuits they control. If you're not sure, turn off the breakers or remove the fuses and have a helper find which outlets are affected.
- To reset a circuit breaker, turn off and unplug the lights and appliances you were using. Then flip the breaker switch "off" first, then back to "on." If you have push-button breakers, push it all the way in to reset.



Circuit breakers and fuse boxes - continued

- To replace a blown fuse, turn off the appliances and lights you were using. Turn off the main switch on the fuse box and check to see which one has blown.
- Be sure the replacement fuse is the proper size; using a fuse that's too large for the circuit can cause an electrical fire.
- Never substitute an object, such as a coin or a paper clip, for a fuse.
- If it's dark, use a flashlight — not a candle.

Keep in mind that circuit breakers and fuses are designed to protect your home's electrical system — NOT to protect you and your family from electrical injuries.

A blown fuse or tripped breaker is a signal that something went wrong. The problem could be from outside your home, such as a power surge during a lightning storm, or it could be from inside, if too many devices were used in a single circuit or if the wiring was done incorrectly.

If you're experiencing any of these problems, call a certified electrician to inspect the entire system:

- Frequent tripped breakers or blown fuses
- Power “blinks” (momentary interruptions)
- Dimming or flickering lights
- Sizzling or buzzing noises
- Loose or damaged outlets
- Overheating of the circuit panel or any outlets or switches



Grounding

A good ground connection is essential to the safe and reliable operation of any piece of electrical equipment. Electrical grounding ensures that if there is ever a short circuit on a piece of electrical equipment, current will flow through the ground system and trip a breaker or blow a fuse.

A grounded outlet has three holes for each plug. In a properly wired outlet, the rounded slot is the ground connection. A grounded outlet must be used correctly:

- Never cut off the third grounding prong on an appliance plug.
- Don't try to install a grounded outlet in an ungrounded outlet box.
- Use “cheater” adapter plugs only on a temporary basis. Use only if the outlet box is grounded, and make sure the small metal circle or the pigtail adapter contacts the screw in the middle of the outlet.





Ground fault circuit interrupters

For an added measure of protection, outlets near water sources, like sinks and laundry appliances, as well as all garage and outdoor outlets, should have a ground fault circuit interrupter (GFCI). These are the outlets with the “test” and “reset” buttons.

A GFCI works by monitoring the flow of electricity through the outlet’s circuit. If there is any variation in the current, the GFCI will automatically cut off the flow of electricity, preventing injury. According to the Consumer Products Safety Commission, if every household used GFCIs, deaths from electrocution in and around the home could be reduced by 50 percent.



There are four types of GFCIs:

- “Whole-house” devices for circuit panels that protect against external power surges. These should be installed only by a certified electrician.
- Whole circuit devices for circuit panels, that are used in place of circuit breakers. These should be installed only by a certified electrician.
- Receptacle-based protectors that replace standard wall outlets. You can install these yourself by carefully following manufacturer’s instructions.
- “Portable” units that simply plug into a wall outlet. Any homeowner can use this type.

GFCIs should be tested every month. Plug a lamp or radio into a GFCI outlet and turn it on. Push the “test” button on the outlet; the lamp or radio should turn off immediately. If it doesn’t, the GFCI has been wired improperly or is no longer functioning.

GFCIs are inexpensive and provide the best protection against electrical hazards, and we strongly recommend using them in your home. But remember, even the best GFCI can’t offer 100% protection, so never forget other electrical safety rules.

A GFCI works by monitoring the flow of electricity through the outlet’s circuit.

Using electricity safely

While most electrical fires are caused by faulty wiring or overloaded circuits, most electrocutions in the home are caused by improper or careless use of appliances and small electrical devices. Electrical accidents can occur in any room in your home — and outdoors — so always be on the lookout for opportunities to eliminate safety hazards.

Inside your home

- Cover all electrical outlets and wall switches with cover plates, and replace any that are damaged.
- Protect small children and pets by using plastic safety covers in all unused outlets and keeping cords out of sight and reach. A cord as short as 12 inches can strangle a child.
- Don't yank electrical cords from the wall — this can damage both the plug and the outlet.
- Don't attach a cord to another surface with nails or staples which could break the insulation. Try not to twist, bend or walk on cords.
- Don't use damaged or brittle electrical cords, even if bare wires aren't visible.

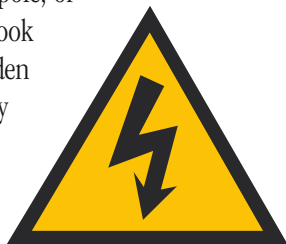


- Make sure all electrical devices are in good repair — double-insulated tools and appliances are the safest. If a damaged wire inside a tool or appliance touches the body of the device, it would be the same as touching a bare wire. Never attempt to fix an electrical appliance or tool unless the unit is unplugged.
- Use extension cords only on a temporary basis, and don't plug one extension cord into another.
- If you need to plug multiple devices into a single outlet, as with a home office or entertainment system, use a quality surge suppressor with enough sockets for every component. Don't use inexpensive outlet “extenders” with three or four sockets.
- Keep all electrical devices away from water sources.
- Don't run electrical cords under carpets — this can cause them to overheat and catch fire. Also avoid running cords under furniture, which can damage the insulating cover.
- If you need to turn off the power to install lighting or replace an outlet, flag the fuse or breaker switch so no one else touches it while you're working. If you're not sure which circuit you'll be working on, turn off the main breaker switch or remove the primary fuse cartridge.



Outdoor Safety Tips:

- All outdoor outlets, including those in garages, should have waterproof covers and GFCIs (see page 7).
- If you'll be using a ladder or pole, or working on the roof, always look up for power lines. Even wooden ladders can conduct electricity through their metal screws. Stay at least 10 feet away from overhead power lines.



Using electricity safely - continued

- Don't assume the black coating on wires is insulation — it could be just plastic weatherproofing that provides no protection from contact injuries.
- Call a professional for help trimming trees near power lines, and don't let kids climb trees near power lines.
- Keep flying toys like balloons, kites and model airplanes away from power lines.
- Keep electrical devices and cords away from water.
- If you have a pad mount transformer (usually a large green metal box) in your yard, keep children and pets away. If the door is open or the lock is broken, give us a call to have a customer service mechanic fix it. Don't disguise the transformer with paint or plantings — a utility worker might need to work safely around it or find it quickly in an emergency.
- Teach kids to stay far away from substations, and explain what the warning signs mean. If a toy or pet accidentally gets inside a substation, give us a call — we'll be happy to retrieve it for you.
- Don't hang signs on utility poles. Nails, staples or tacks can pose a big danger to workers who must climb the poles.
- Never tamper with an electric meter (it's dangerous and illegal), and keep it free of ice and snow during the winter.
- If a power line accidentally contacts your car in an accident or during a storm, stay in the vehicle until help arrives and don't let others approach. If a fire is imminent and you need to leave the vehicle, hop out on both feet, being careful not to touch the car and the ground at the same time. Continue hopping with your feet together until you're as far away as possible.

Call before you dig

If you're planning to do any outdoor work that involves digging, such as landscaping, installing a fence or building a deck, be sure to call before you dig. Just dial the number below for your state at least three days before you start, and the area "one-call" office will send a utility worker to mark the location of underground lines on your property.

- Wisconsin: 1-800-242-8511
- Iowa: 1-800-292-8989
- Minnesota: 1-800-252-1166
- Illinois: 1-800-892-0123



Call before you dig - continued

When you start digging, try to stay at least 18 inches away from the marked lines. If you're planting a tree, remember to consider the length of the roots as the tree matures, and don't plant larger trees under power lines.



If you'd like to learn more about getting the most from your energy, be sure to check out our other brochures on:

- Heating Your Home
- Insulation
- Power quality
- Choosing and Using Appliances
- Water Heating
- Lighting Your Home
- Cooling Your Home
- New home construction

You can also find great energy efficiency and safety tips on our website at www.alliantenergy.com and www.powerhousetv.com or if you have questions, feel free to call us at 1-800-ALLIANT.



For more information

1-800-ALLIANT

www.alliantenergy.com

www.powerhousetv.com



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