

TREES and POWER LINES

RIGHT-of-WAY SAFETY



WESTERN AREA POWER ADMINISTRATION

Trees and powerline right-of-way safety

Why doesn't Western trim trees as other power companies do, and instead cuts them down?

Western treats each situation on its right of way individually, working to maintain a balance between our requirements for safety and reliability with our commitment to being a good neighbor. Trees and transmis-

sion lines often make lousy neighbors, especially when tall, fast-growing trees are planted under power lines or right next to them. Trees can carry electricity from nearby lines down through their trunks and this voltage can zap people, pets or other objects that get near enough to the “electrified” tree.

Trees taller than power lines that are too close to the line can be blown over in high winds, pulling the line down from supporting towers or poles, even while the line remains energized—thus creating a very dangerous, life-threatening situation for an unaware passerby.

Continually trimming trees that are close to a high-voltage transmission line is not as safe as removing them. Trimming trees near high-voltage, energized power lines is dangerous work that can be deadly. In 1994, a Western line worker was killed while trimming trees.

Because of this danger, Western urges landowners to contact us before trimming or removing trees on our transmission line right of way.

Maintaining public safety

Western's primary transmission line right-of-way responsibilities are first, to maintain public safety and the safety of our employees, and second, to keep power flowing reliably across our bulk transmission system, delivering electricity to our customers—the cities, towns, rural electric cooperatives, public utility districts, state and Federal agencies and Native American tribes in 15 central and western states.

To deliver this power, Western owns and maintains more than 17,000 miles of transmission line strung from northwestern Minnesota

and Hinton, Iowa to Redding, California and Yuma, Arizona. To keep these lines humming with electricity, Western line crews regularly patrol its lines to make sure the equipment is in good shape, conditions on the rights of way below are safe and our crews can safely access the transmission lines in all kinds of weather. We identify and repair broken insulators and damaged sections of power line. We repair or replace towers and power poles as needed.

Our crews also look for potentially dangerous situations in the rights of way. Swimming pools, buildings, irrigation equipment, wire fences and tall trees can all be dangerous—when too close to power lines.

Our transmission lines all carry electricity at voltages much higher than the electricity flowing through neighborhood distribution lines. In fact, our transmission lines carry 50 to more than 100 times the electricity flowing in neighborhood power lines.

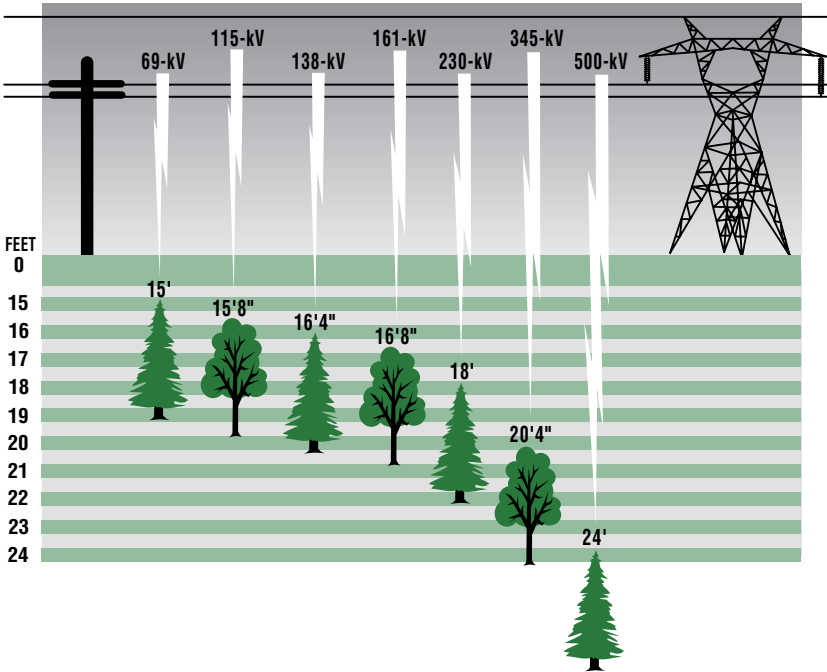
Fire, electrical hazards

Trees growing near power lines can cause a fire, as well as an electrical, hazard to anyone in contact with the tree at ground level. Trees don't have to physically touch an energized power line to be dangerous. Electricity can arc from the power line to nearby trees given the right conditions, such as a voltage surge on the line from a nearby lightning strike. This electric current can kill anyone caught near the tree and can cause a fire.

This arcing can also cause power outages. Tree-related power outages are more than just an inconvenience. They not only disrupt service to your home or business, they also disrupt power to hospitals, emergency response centers and patients on life-support equipment. As the August 2003 Northeast blackout reminded all of us, less than vigorous tree trimming can disturb electrical service for millions of customers.

The National Electric Safety Code specifies that power lines be kept specific distances from nearby objects—including trees. The code requires greater clearances for higher voltage lines. For the same safety reasons, transmission line rights of way are wider than for local distribution lines.

Minimum clearances between power lines and danger trees



Clearance: How danger is controlled

Electricity travels on high-voltage power lines high above the ground. However, electricity, like water, seeks the most direct path to the ground through nearby objects. Just like lightning, electric current in a high-voltage power line may seek to reach the ground by jumping, or arcing, to a tall-growing tree. To avoid this, Western maintains a safe distance between its power lines and tree limbs. The higher the voltage of the power line, the more clearance required.

Clearances between power lines and other objects, including trees, must allow for line sag. During warm weather or when the line is carrying heavy electrical loads, it heats up and stretches. This makes the line longer and it sags closer to the ground or objects underneath it. Because the amount of sag varies with electrical load, weather and line composition, a safe clearance distance in winter may not provide the same safety on the warmest summer days. Thus, to maintain a safe distance between the line and anything that can con-

duct electricity, Western maintains a clear zone on all sides and below its power lines.

Tall growing trees or other tall objects that could fall into a power line must be removed. Heavy winds can blow branches into power lines and additional weight from snow and ice can bend or break branches, bringing them close enough to cause a flashover.

Neighborly right of way uses

Western has long worked with landowners and communities to allow compatible uses within its transmission line rights of way. Farming, grazing, open space, parks, golf courses, parking lots, bike paths and hiking trails are just some of these compatible uses.

Nevertheless, there are situations when Western must responsibly cut trees to maintain safety and reliability. Western is committed to working with landowners to minimize the impacts when we must remove trees. Western's policy is to continue to work with landowners to minimize the need to cut trees, while always emphasizing our most important "good neighbor" activity, which is maintaining a safe right of way and providing reliable electricity.

Western's commitment to landowners

If we must cut trees on your land, we promise to:

- Make a good faith effort to contact you before we routinely cut down trees on your property.
- In the event of an emergency situation requiring our immediate action, we'll contact you as soon as reasonably possible.
- Follow the rules as outlined in our easement across your land.
- Make every effort to protect your property from damage.
- Compensate you for damage to your property or repair any damage we may have caused.
- Either leave the logs for your use or haul them away, as you request.
- Remove and/or chip all branches and haul the chips off site, unless you want to keep the chips for use as mulch.
- Cut trees in an environmentally responsible way.

What can you do to help?

Property owners should review the power line easement document and become familiar with its provisions. You can call Western if you have questions or need additional information about safe uses of your property under or near our transmission lines.

Even though our crews regularly inspect our transmission lines, you can help us if you notice anything such as trees or limbs that might interfere with our power lines. You can also help stop potential power line problems before they start. If you're planning to plant trees on your property, don't plant them under the power lines. Shrubs, hedges and other plants must also be kept away from transmission towers and poles and off power line access roads.

Dense stands of trees, shrubs or hedges make it difficult to get to power lines or electrical equipment to repair or maintain them. They may also make the difficult job of maintaining the transmission system even more hazardous to the line crews. Call Western to find out what kinds of plantings are safe and allowed within the right of way.

Powerful facts

The current needed to light a 10-watt light bulb is more than enough to kill you. Trees don't need to touch power lines to be dangerous. Lines can sag as much as 15 or 20 feet when the weather's hot or the lines are carrying heavy electrical loads. Electricity from high-voltage lines can also arc or flashover from wires to nearby trees without the two ever physically touching.

Tree cutting and power line safety

Always look for nearby power lines before beginning to cut down any tree. Call the local utility before cutting down any tree that might fall into a power line.

Treat all power lines as energized. Never climb or attempt to fell a tree that has a limb caught in a power line. You may not see any visible evidence that this tree is electrified or dangerous. Beware of this hidden hazard.

Trees that could reach a power line should never be felled by a land owner. If a tree falls into a power line, stop at once! Stay clear and call the local utility.

Maintain the required clearances between any equipment and power lines. **If equipment comes into contact with a power line, stop at once!** Instruct the operator to stay on the equipment until help arrives. Keep others away.

If a fire starts from an electrical contact or a downed power line, contain the fire if possible, but keep all fire fighting equipment and people away from the downed line. **Do not use water near the downed line.** Notify the local fire department and local utility immediately. Stay clear of the line and treat it as energized.

For more information about right of way uses and limitations,
contact your nearest Western office
or visit our Web site at **www.wapa.gov**.

In an emergency, call 911 or your local utility.

