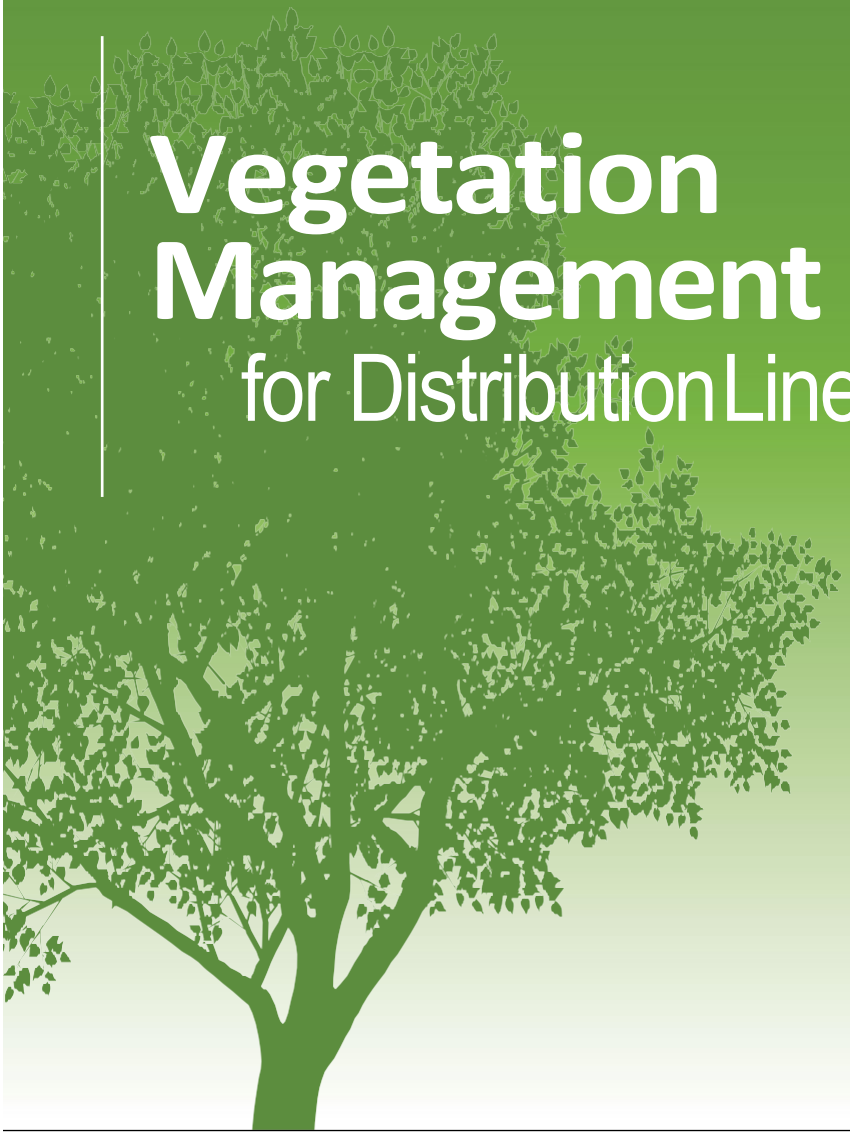
Vegetation Management

for Distribution Lines



FirstEnergy®

Working **Hand in Hand** with Nature

Trees contacting power lines and other electric facilities are the major cause of electric service interruptions, especially during severe weather. To prevent interruptions to your electric service, FirstEnergy has a year-round vegetation management program aimed at keeping nearly 280,000 miles of lines in our six-state, 65,000-square-mile service territory clear of trees and undergrowth.

In 2018, FirstEnergy was recognized for the 20th consecutive year as a Tree Line USA utility by the National Arbor Day Foundation in cooperation with the National Association of State Foresters. The award recognizes utilities that promote the dual goals of dependable utility service and abundant, healthy trees along America's streets and highways. Award-winning companies demonstrate excellence in tree care, training and public education.

What are **Distribution Lines?**

Electrical distribution lines are underground or overhead power lines that carry electricity from a substation to your home. Overhead lines are typically visible throughout your neighborhood, extending from pole to pole. Occasionally trees or other types of vegetation can interfere with these lines and it is important to manage this before it affects your electric service.

Why is Tree Pruning **Necessary?**

Trees can threaten service reliability

Trees interfering with power lines can cause two different types of outages.

1. A momentary power interruption – When a tree limb contacts a power line, the tree becomes an alternative path for the electricity, which creates a short circuit. Small branches and twigs often clear from the line before a strong path to ground is established. The result is a momentary power interruption that lasts just long enough to cause your lights to blink. However, when many twigs and branches are in contact with a line, the cumulative effect can be enough to cause a complete loss of power.
2. A complete loss of power — Lightning, wind or the weight of ice and snow can snap tree branches and topple them into power lines. Trees and tree limbs weakened by age, disease or insects can also break and damage power lines. This results in a sustained interruption that requires repairs to the line.

Trees can threaten public safety

When trees impact electric lines and cause power outages, it's more than inconvenient. Such situations can also threaten public safety, especially when they involve fallen wires or when service is interrupted to hospitals, nursing homes, traffic light controls, water pumps, fire alarms and other vital facilities. **Never go near a downed wire and warn others to stay away.** If you see a downed line, stay at least 30 feet away and call 911 immediately to report it.

Pruning **Intervals**

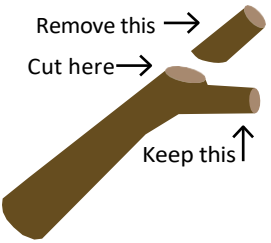
Although it is not possible to predict all tree-related problems, FirstEnergy's tree-pruning program is designed to prevent safety or reliability problems from occurring. Typically, we prune trees on a maintenance cycle every four or five years. We also review records of power interruptions attributed to trees to help establish our tree-pruning priorities.

Professional Utility Tree Workers Help Keep the Lines Clear

FirstEnergy employs independent contractors whose skilled, professional utility tree crews prune trees to provide enough clearance between limbs and lines for safe and reliable service. Utility tree crews perform the work, following ANSI A300 pruning standards, under the guidance and inspection of FirstEnergy's professional utility forestry staff.

We encourage our contractors to use natural pruning methods such as drop-crotch or directional pruning, proven to be the best method for the long-term health of the tree. It is called drop-crotch pruning because the proper cut for the best health of the tree is at the crotch of the branch where it joins a larger branch or trunk. It is also known as directional pruning because it directs subsequent growth away from the power lines. This type of pruning reduces the amount of wood to be removed in future trims.

Drop-crotch cut



When Pruning **Isn't Enough**

Occasionally, trees are planted in unsuitable areas. Some trees belong in the forest, not in an urban environment. For fast-growing trees like silver maples, willows and sycamores, the repeated prunings required to keep limbs clear of power lines increase tree decay and make trees more susceptible to disease. When these types of trees are placed directly under or near power lines, removal is the best solution.

Wood Disposal and **Stump** Removal

Generally, utility tree crews do not remove stumps or roots of trees, although this service may be available at a minimal cost to property owners in some areas. In most cases, stumps will be cut off flush with the ground. Trees that are located in fencerows or that contain metal, cement, rocks, etc., will be cut above the interfering material.

After a tree is pruned or removed, small tree limbs and branches are disposed of in a manner that is acceptable to the landowner and FirstEnergy. Wood that is too large for the chipper is cut into manageable lengths, or as otherwise described in the tree removal agreement, and left on the property near the base of the tree. Disposal or use of all such wood is the property owner's responsibility.

Customer Notification is Important

In most cases, we will attempt to notify the property owner before removing a tree. However, in an emergency, we are not always able to contact the property owner in advance. If the tree in question is located between utility poles, a Forestry representative will determine if FirstEnergy will remove the tree. Where trees are located between a utility pole and the customer's home, we will disconnect the service, but in most cases the homeowner will be responsible for the actual tree removal. Please call your FirstEnergy utility for specific details about your tree and power lines.

Proper Tree Placement

Tree management around power lines requires a long-term perspective. The conflict between trees and power lines can be resolved through timely, effective pruning and also by making sure that the right trees are planted in the proper place.

Our professional forestry staff recognize that each tree has its own unique characteristics. While many trees contribute greatly to our living environment, others don't do well in certain areas. Tall-growing trees are not compatible with electric lines. Areas around distribution power lines have only 25 feet of growing room for tree height, so it does not make good sense to plant trees that will grow 80 feet tall in such a place.

We prefer that you avoid planting any tree underneath power lines, but if you do the key is to select the right kind of tree for the location. As the diagram shows, make sure any tree planted within 20 feet of neighborhood distribution power lines is a variety that will grow to a mature height of 25 feet or less. **Small trees such as flowering crabapple, dogwood or serviceberry are ideal for these locations.** In addition, such trees often feature smaller root structures. So they're also less likely to crack sidewalks and driveways or to clog underground drain lines.

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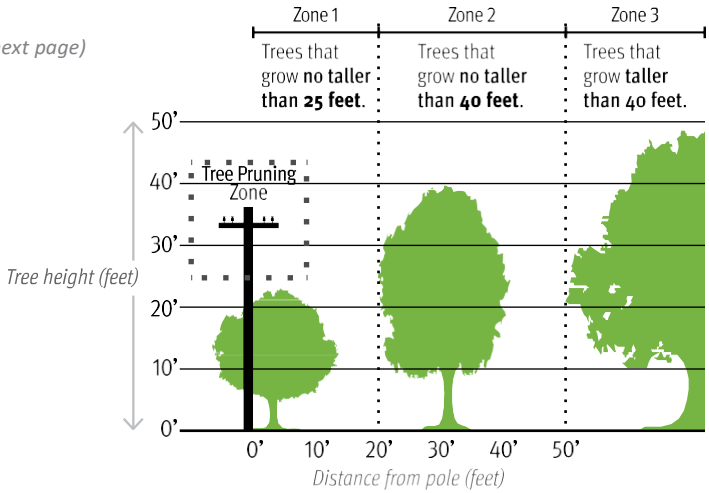


Proper Tree Placement *(continued from previous page)*

Plant taller trees farther away to ensure they can't grow into power lines. At distances of 20 to 50 feet, plant trees that grow to a height of 40 feet or less. For instance, linden or magnolia trees are a good choice in these areas.

If you want to plant a tree that grows tall, such as a maple, oak, pine or spruce, make sure it's at least 50 feet from the nearest residential overhead lines.

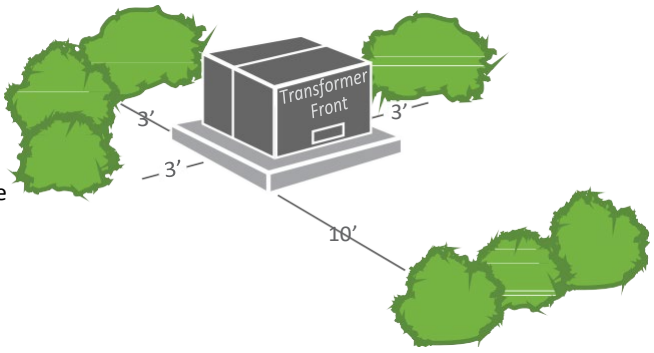
There are a number of tree varieties that are specifically not recommended for use near overhead lines of any kind. The disadvantages of these trees include brittleness – which makes them vulnerable to storm damage – or susceptibility to disease and insect infestations.

Trees to avoid for these reasons include:

Black Locust
Callery Pear
Catalpa
Box Elder
Elm – American
Elm – Siberian
Horse chestnut
Mulberry
Poplar *(Carolina, Lombardi or other hybrids)*
Silver Maple
Sycamore
Tree-of-Heaven
White Pine
Willow

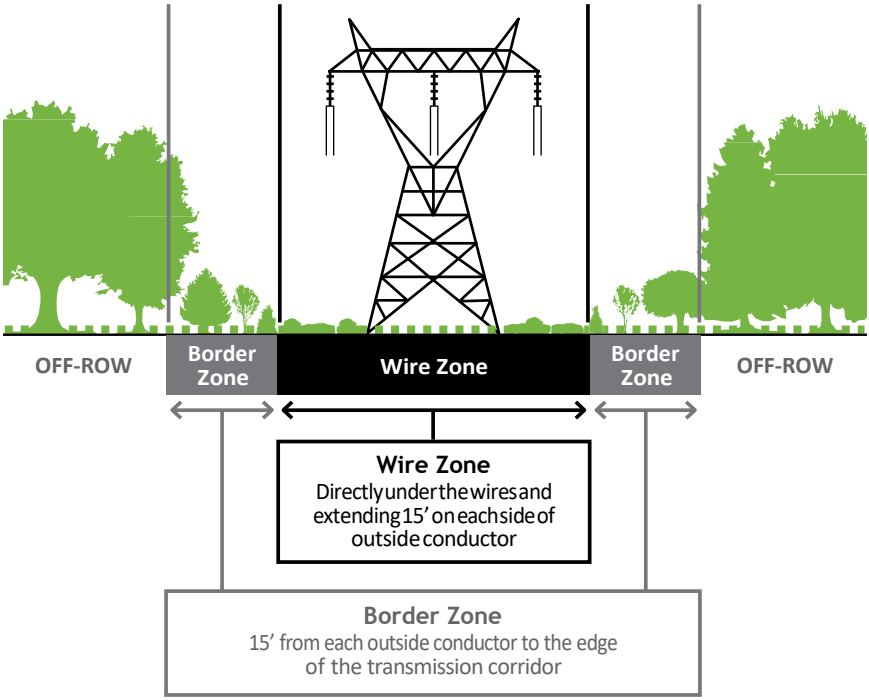
Underground Electric Service

Do not plant trees and shrubs too close to underground lines. Trees with shallow surface roots or deep spreading roots can damage them. Special care also should be taken when planting near above-ground pad mount transformers. Please plant trees and shrubs at least 10 feet away from a transformer's service door, and at least three feet from its back and sides. Remember to consider the plants mature width prior to spotting the location.



Transmission Lines and Rights-of-Way

Vegetation around transmission lines is treated much differently than vegetation around distribution lines. When site conditions permit, FirstEnergy utilizes the "wire zone-border zone" approach to perform vegetation maintenance on the actively maintained right-of-way. All trees and incompatible vegetation are removed and controlled in both zones. In the "wire zone," which extends about 15 feet beyond each side of where the wires are attached to tower or structure, efforts are made to encourage a low growing plant community of grasses, herbs, and shrubs that mature at less than five feet tall. In the "border zone," which extends beyond the wires to the edge of the ROW, a plant community of forbs and taller compatible shrubs that mature at 15 feet or less may be allowed to grow depending on site conditions.



We also inspect the areas beyond the ROW. Trees that are dead, dying, diseased, structurally defective, leaning or significantly encroaching may be removed if they are determined to pose a danger of arcing or falling into the transmission line or facilities.

If you are considering planting shrubs on any transmission right-of-way, please contact our utility forestry staff for information.

Call **Before You Dig**

Before you plant trees or shrubs, dial 8-1-1. This federally mandated national "Call Before You Dig" number was created to help protect you from unintentionally hitting underground utility lines. Call at least three days prior to starting your project to have your lines marked so you can dig safely.

The **Big Picture**

We take our job of providing reliable and safe electricity to your home and community very seriously. One tree-related outage can affect hundreds of customers. We appreciate your cooperation in supporting our vegetation management program. By working together, we can hold down the cost of your electric service, reduce the possibility of power interruptions to your neighborhood, and still enjoy the positive qualities that trees contribute to our lives.

If you have any questions about our vegetation management program, please visit **www.firstenergycorp.com/trees** or call your FirstEnergy electric utility.

The Illuminating Company . .	1-800-589-3101
JCP&L	1-800-662-3115
Met-Ed	1-800-545-7741
Mon Power	1-800-686-0022
Ohio Edison	1-800-633-4766
Penelec	1-800-545-7741
Penn Power	1-800-720-3600
Potomac Edison	1-800-686-0011
Toledo Edison	1-800-447-3333
West Penn Power	1-800-686-0021

This brochure is provided for informational purposes only. Vegetation management programs require a structure that allows flexibility in order to accommodate each situation's unique characteristics, so specific work plans may vary.

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