

# Maintaining a Safe and Reliable Transmission System

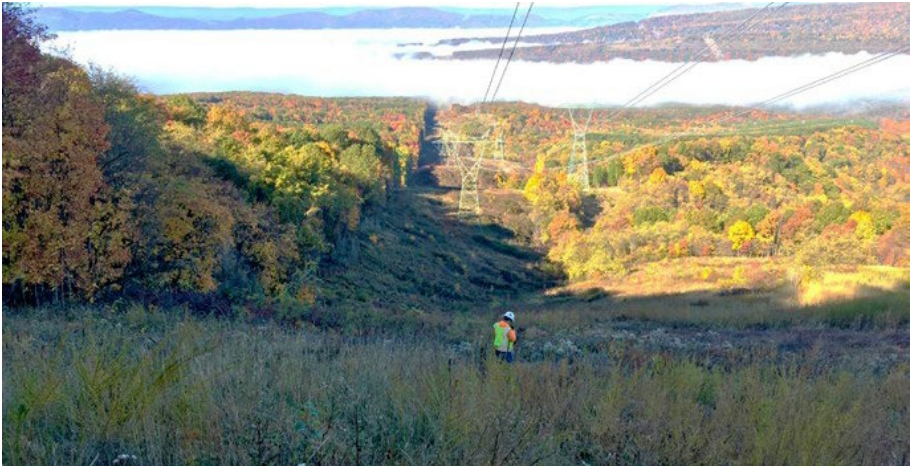
*Comprehensive Vegetation Management*



**FirstEnergy**<sup>®</sup>

# Managing Vegetation Along FirstEnergy's Transmission System

---



Transmission lines are considered the “super highway” of the electric grid, allowing large amounts of electricity to be moved across the country from power plants to end-use customers.

As part of its ongoing efforts to enhance service reliability, FirstEnergy has a comprehensive, year-round program to remove and trim trees and manage vegetation along more than 13,000 miles of transmission line corridors in six states.

FirstEnergy's transmission system includes lines ranging in size from 69,000 to 500,000 volts. The width of transmission line rights-of-way (ROW) vary according to the voltage of the lines and the easement rights that were negotiated with the property owner prior to the lines being constructed.

Easements give FirstEnergy the right to build, operate and maintain transmission lines, which includes removing trees and managing vegetation. While many easements were negotiated by previous property owners, the terms of the agreement remain in place even if the property is transferred or sold.

Unless properly maintained by FirstEnergy, trees have the potential to come in contact with power lines and other electric facilities and can be a major cause of power outages, especially during severe weather.

As utilities look to enhance reliability and safety, it is important that existing vegetation management easement rights are enforced. The removal of trees under high-voltage lines rather than pruning serves to minimize the chance of any vegetation contact.

FirstEnergy is aware that this can be an emotional issue for property owners – but the work must be done to remain in compliance with reliability mandates established on the federal level by the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Council (NERC), and by state public utility commissions.

Proper vegetation management does not always involve the removal of all vegetation. Compatible shrubs that do not have the potential to interfere with electric facilities are typically retained depending on site conditions.

Ultimately, transmission line corridors should include a diverse mixture of grasses, low growing shrubs and other ground cover preferred by birds, deer and small animals to promote a thriving wildlife habitat. In this way, a well-managed ROW provides food and cover wildlife need to survive, and the reliability electric customers require.



# Ensuring Service Reliability

---

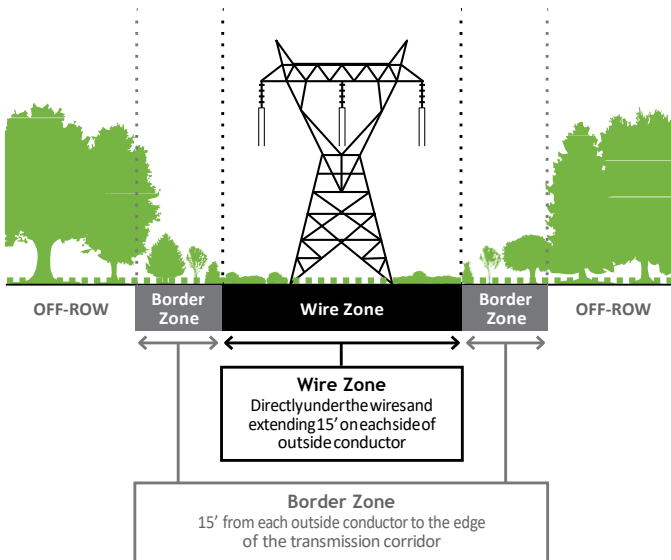
FirstEnergy has a comprehensive vegetation management program designed to maintain its transmission ROW. As part of this program, all safety precautions are utilized by FirstEnergy employees and forestry contractors. We are committed to managing vegetation in ways that will have a minimal impact on our environment.

Creating and sustaining a compatible, stable and low-growing plant community on the ROW is a key component to a successful vegetation management program.

FirstEnergy’s policy regarding transmission lines includes the removal of all trees, regardless of height, to the edge of the ROW. This could include removing trees where pruning was done in the past.

In order to perform vegetation maintenance, FirstEnergy also requires a clear path for trucks and other heavy equipment to access the ROW and transmission structures. As a result, we focus on removing or controlling vegetation that may impede access and affect our ability to inspect transmission equipment for maintenance work.

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 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.

## Inspecting the Corridors

---

Inspections are a key component of FirstEnergy’s comprehensive vegetation management program.

Twice a year, helicopters fly low over our transmission line corridors to inspect the condition of the electrical equipment and monitor any ROW encroachments from trees, shrubs or other vegetation.

In addition to annual inspections, work activities are performed under established four- or five-year maintenance cycles, based on expected growth rates and other factors.

However, if a mid-cycle inspection uncovers an issue with a leaning tree or fast growing vegetation, the problem will be addressed immediately rather than waiting until the next regularly scheduled vegetation management cycle.



## Multiple Options Can Be Used to Control Trees and Vegetation

---

FirstEnergy's policy is to make every reasonable effort to notify property owners prior to vegetation management work taking place along the transmission ROW. However, in the event of storms or other emergencies, advance notice may not always be possible.

FirstEnergy utilizes integrated vegetation management (IVM) techniques, which involve evaluating the transmission ROW to identify incompatible vegetation, the timeframe for control, and evaluation and selection of control options. These options include manual, mechanical and chemical methods that are used to prevent encroachments from vegetation located on and adjacent to transmission corridors. Site characteristics, environmental impact and worker/public safety are analyzed to determine the most effective control options.

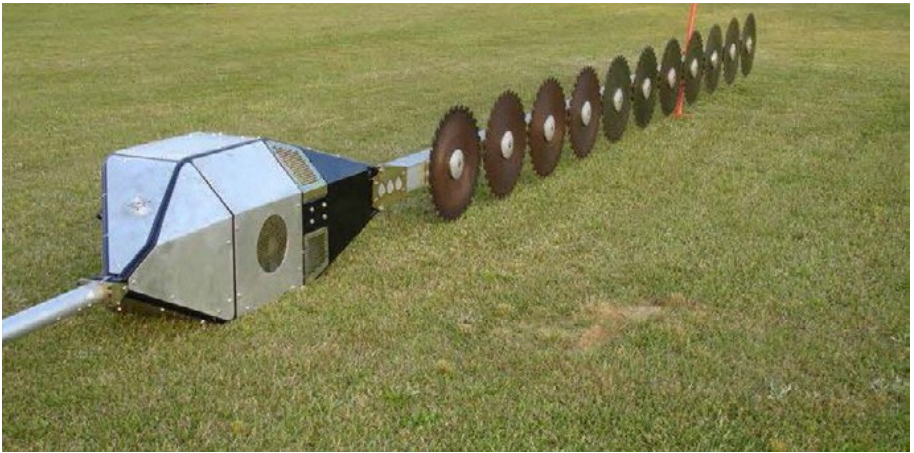
The goal of using IVM techniques is to create a sustainable and compatible vegetated plant community within and along the transmission corridor. IVM also provides a unique opportunity to create pollinator-friendly habitats that sustain healthy populations of bees, butterflies and other pollinating insects.

Depending on the location and the voltage of the transmission line, FirstEnergy and its tree contractors can utilize specific control methods – manual saws, aerial saws or herbicides – or a combination of methods, to safely and effectively remove and control vegetation.

### ***Manual Trimming***

For as long as there have been power lines, forestry personnel have used manual saws and bucket trucks to remove trees and limbs. However, using this method is very labor intensive and some transmission lines are not easily accessible by foot or in a vehicle.

Manual tree trimming also is limited by the reach of the bucket truck or ladder, which can make trimming the very top of the tree a challenge.



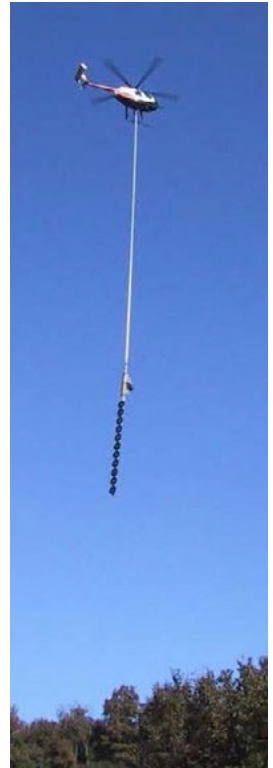
### ***Aerial Saw***

Another way to trim along the edge of a ROW is using helicopters equipped with aerial saws. The saw attachment consists of multiple 24-inch rotary blades powered by a motor suspended on a vertical boom beneath the helicopter. The company has been safely using aerial tree-trimming since 1988 and aerial saws are in accordance with American National Standards Institute (ANSI) A300 tree pruning standards.

As the helicopter flies slowly along the ROW, the aerial saw cuts and trims trees and other vegetation rapidly and cleanly. Tree limbs 8 to 10 inches are neatly cut without tearing, and typically fall straight down, assisted by the air blasts from the rotors of the helicopter.

### ***Benefits***

The aerial saw eliminates the risk of injury to workers using bucket trucks or climbing trees near energized lines. The aerial saw can be used in remote areas or places inaccessible to a vehicle. In addition, this method helps protect private land and roads from damage by



## Multiple Options Can Be Used to Control Trees and Vegetation (continued)

---

heavy equipment making repeated trips during the course of the work schedule.

The aerial saw can perform work quickly, side-trimming both sides of a 10-to-12 mile right-of-way in one week. It also is an effective tool to use in environmentally sensitive areas since it is not necessary to take equipment in to perform the work.

### *Clean Up*

Brush that has fallen onto access roads, maintained yards, agricultural fields or in streams will be moved to adjacent wooded areas by a ground crew shortly after the aerial saw has been used. The ground crew also will identify and remove individual dead trees found along the ROW that potentially threaten the transmission line.

The aerial saw is not a replacement for conventional tree-trimming methods, but it is very effective on hard-to-reach transmission and sub-transmission lines. This method is not used to trim trees in residential areas unless safety buffers are utilized.







Using an aerial saw allows subsequent maintenance work to focus on the removal of “priority” trees off the ROW. By using the aerial saw, we expect to extend the length of our tree-trimming cycle in rural areas.

### ***EPA-Approved Herbicide Application***

Once the ROW is cleared of trees, it is important to take steps to prevent future growth of incompatible vegetation. U.S. Environmental Protection Agency (EPA)- approved herbicides for use on utility ROW provide the most effective means of controlling unwanted trees, shrubs and other incompatible plants.

### ***Safe and Effective***

The EPA approves such products for use only after determining that they will not adversely affect people, animals or the environment when properly applied. Nearly 60 years of university and industry research also has shown that herbicide use on ROWs can help create optimum plant and wildlife habitats.

These products have undergone significant testing. In fact, some of the materials our contractors use are the same as those commonly used by homeowners to control weeds and other vegetation.

Herbicide application is the preferred method to control immature trees or brush. Herbicide control options are determined by terrain, brush height, and density and are designed to control only incompatible vegetation.

## Multiple Options Can Be Used to Control Trees and Vegetation (continued)

---

While mechanical methods such as cutting and mowing might appear to be less harmful compared to herbicides, these methods have many disadvantages. For example, cutting and mowing vegetation have the undesired effect of causing vegetation to grow back thicker and fuller, requiring repeated and often more frequent trimming.

### *Less Needed Over Time*

In subsequent years, once the preferred low-growing shrub/herb community becomes dominant, less herbicide will be needed for future maintenance as incompatible species are brought under control.

Ultimately, herbicides eliminate the need for much more frequent mechanical treatments, like tree trimming and mowing — meaning you'll see our crews much less often.

### *Professional Application*

All herbicides used on ROWs are applied by state-certified applicators or under the supervision of a certified applicator using best management practices. FirstEnergy vegetation managers and its contractors are trained and certified in the use of herbicides.

Herbicides can be applied using several methods:

1.) Aerial applications using a helicopter are used in less populated areas where terrain and accessibility make it difficult and dangerous for ground-based crews to safely apply herbicides.



2.) Trucks or ATVs with spray tanks can be used in areas with accessible ROW.

3.) Backpack sprayers can be used in populated areas, as well as near parks, ponds and other sensitive areas.



Herbicides are important vegetation management tools to stop the spread of invasive plant species. Using herbicides helps control these weeds and other nuisance plants from overtaking ROWs, and will stop the spread to adjacent areas, including your property.

## Guidelines for Planting Near Rights-of-Way

---

If you are considering planting shrubs or other plants on any transmission ROW, please contact a member of FirstEnergy's transmission forestry staff using the customer service numbers listed on the following page. You also can consult your local arborist, nursery professional or cooperative extension agent for more information regarding compatible plant species.

It is important to select the right plant for the right place.

Planting proper vegetation in and around transmission ROW can help provide a sustainable and compatible plant community. However, the vegetation must be limited to low-growing plants – such as grasses, herbs and shrubs – that are less than five feet high at mature height. Plus, vegetation must be planted at least 10 feet away from any pole, tower or guy wire and should not hinder access to the transmission line.

## FirstEnergy Customer Service Phone Numbers

---

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.

Information about FirstEnergy vegetation management is available online at  
**[www.firstenergycorp.com/help/brochures.html](http://www.firstenergycorp.com/help/brochures.html)**.