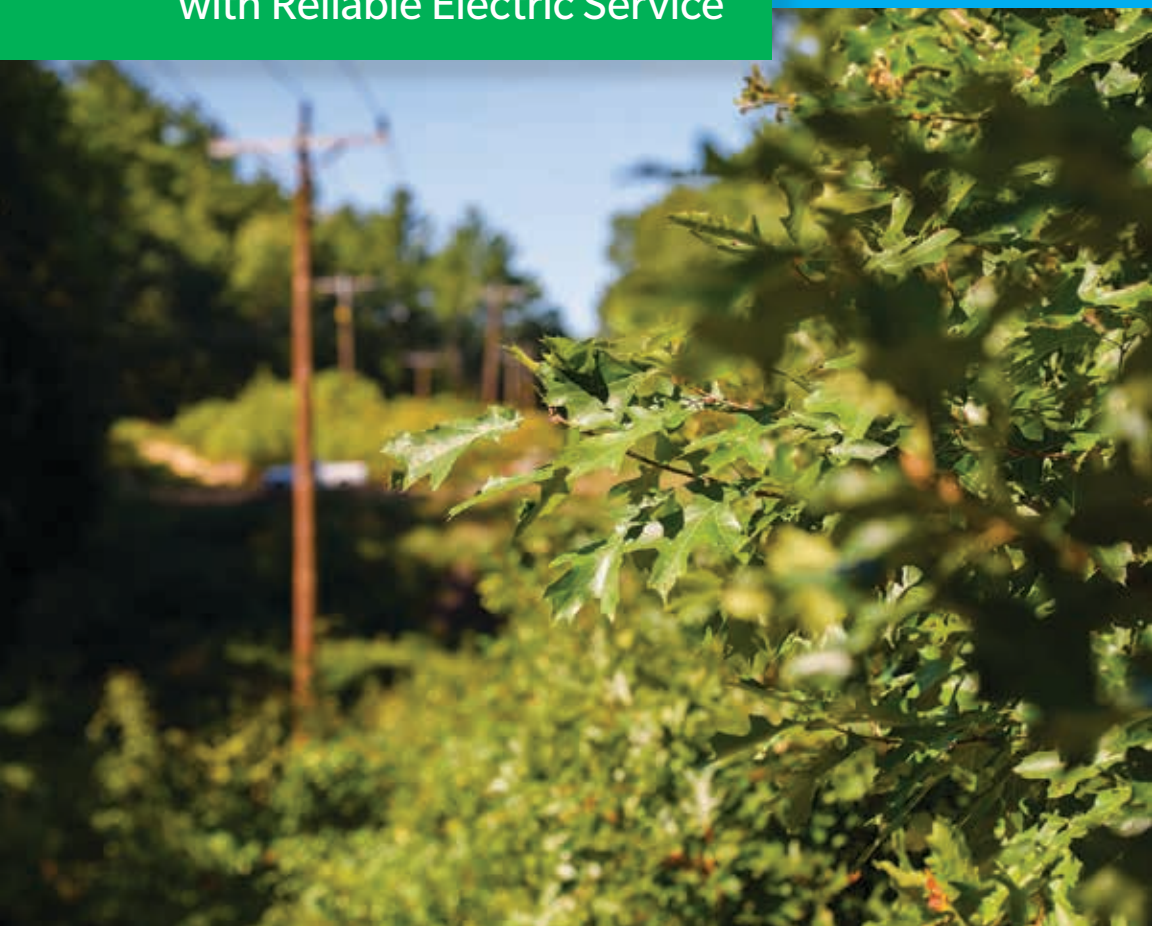


# Understanding Vegetation Management

Balancing Natural Beauty  
with Reliable Electric Service



**EVERSOURCE**

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**New England** is home to some of the most forested states in the country, and while trees of many types and size enhance our region's natural beauty, they can also cause problems when they grow too close to power lines. Falling trees and limbs that take down wires and break other electrical equipment during storms are the leading cause of power outages.

During a typical year, trees are responsible for approximately 25% of all electric service interruptions. When a storm with high winds or heavy snow comes through New England, more than 90% of the outages on Eversource's electric system are caused by trees and tree limbs.

That's why Eversource regularly schedules vegetation management projects on its 40,000 miles of overhead power lines in Connecticut, Massachusetts, and New Hampshire — from the careful pruning or removal of trees near power lines in neighborhoods and along country roads, to keeping large power line corridors clear of interfering trees and other vegetation that could lead to outages.

By working strategically and proactively, Eversource's vegetation management approach reduces both the number and duration of outages. Tree-trimming is the most effective way to improve electric service reliability. It also benefits the communities we serve by removing dead or diseased trees that threaten public roads and safety.

## The Number One Cause of a Power Outage

is falling trees and limbs that take down wires and break other electrical equipment during storms. A major part of Eversource's maintenance of overhead power lines includes trimming nearby trees and vegetation that may interfere with power lines and could cause power outages or risks to public safety.

## Why We Regularly Prune, Trim, and Cut

**Trees and power lines don't mix.** Contact between them can cause power outages, fires, and downed lines — not to mention hazards to people, property, wildlife, and the trees themselves. For reliability and public safety, Eversource hires professionals who remove potentially interfering branches and trees on a regular, rotating schedule.

Typically, Eversource schedules vegetation management along its power lines in cycles of every four to five years, with occasional mid-cycle trimming for locations that cannot wait until the normal cycle.

Before we begin any tree work, we will notify, in person or by mail, property owners and those who live next to or near areas of tree work.

### Vegetation Management goals:

- *Keep customers safe during major outages.*
- *Reduce the impact that major storms can have on customers' electrical service.*
- *Reduce the number of momentary tree-caused service interruptions (when your lights dim and digital clocks blink).*
- *Faster repairs and restoration after storms by removing dangerous trees or limbs — enabling access to electrical equipment.*
- *Prevent damage to electrical equipment.*

## Who Oversees and Performs Eversource Tree Work?

Our certified arborists oversee professionally qualified crews who are contracted to perform regular vegetation management projects. When severe weather triggers widespread outages, we call on these contractors to help make sure power is restored as quickly as possible.

Each year, Eversource invests in proactive vegetation management programs that help us identify required tree-trimming, trees that must be removed, and woody vines that need to be removed from and around utility poles. Our contracted crews complete each assignment in accordance with professional standards established by the American National Standards Institute and the International Society of Arboriculture. The standards ensure that pruning and cuts minimize injury to the tree and consider individual tree characteristics (such as species, size, shape and condition).

While tall-growing New England trees are not compatible in our transmission rights of way, we trim several species that typically grow along roads where our electric distribution lines are located, including:

**Beech • Black Birch • Hemlock • Red Maple  
Red Oak • Sugar Maple • White Pine**

## What are the Different Types of Vegetation Management?

There are two parts of our electric system on which we perform vegetation management:



### Distribution system

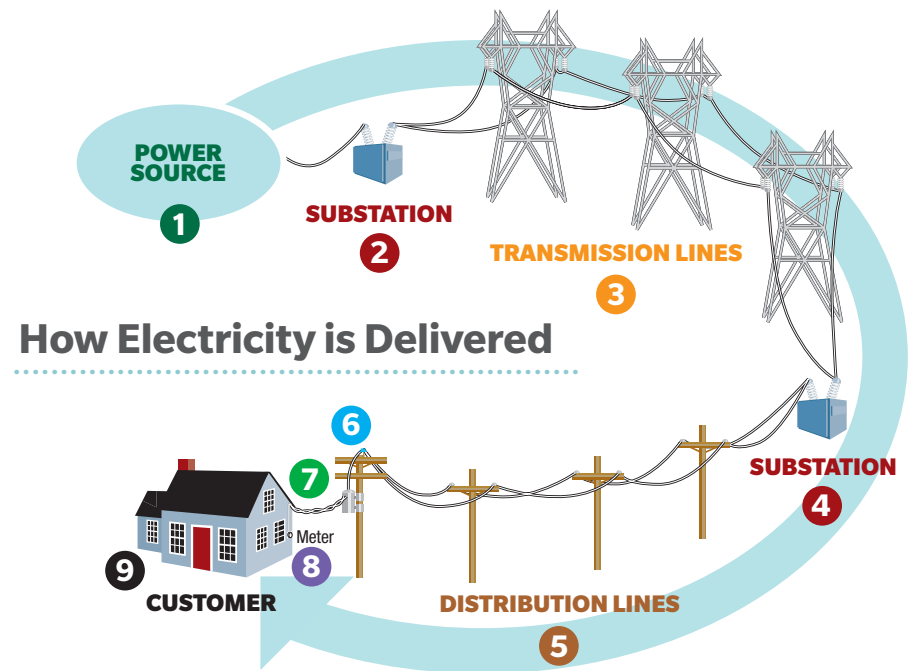
These are the lines typically found along roads and highways that carry power safely to homes and businesses.



### Transmission system

These are large right-of-way corridors that carry high-voltage power from an energy generation source to a substation, where the electricity is then safely distributed to customers.

Throughout the course of the year, Eversource undertakes several types of vegetation management, ranging from regularly scheduled trimming and pruning to removal of incompatible vegetation species or damaged trees.



- 1 Power sources** use a variety of resources to generate electricity.
- 2** Electricity leaves the power plants and enters a nearby **substation** where the voltage is increased to very high levels so that the electricity can be moved long distances throughout the electric system.
- 3** From the substation, high-voltage electricity enters **transmission lines**, where it begins its journey to customers.
- 4** Before reaching your home, the high-voltage electricity is reduced at **local substations** so that it can travel on the **distribution lines** that are often seen lining a street.
- 5** Power from the distribution lines enters a **pole transformer** where the voltage is reduced further to allow the electricity to safely enter your home or business.
- 6** A **service line** (either overhead or underground) carries the electricity from the pole transformer to a **meter** on your property that measures how much electricity your home or business uses.
- 7** Finally, the electricity passes through to a **service panel** inside the home or business, where it can then be distributed through wires that lead to outlets and switches.

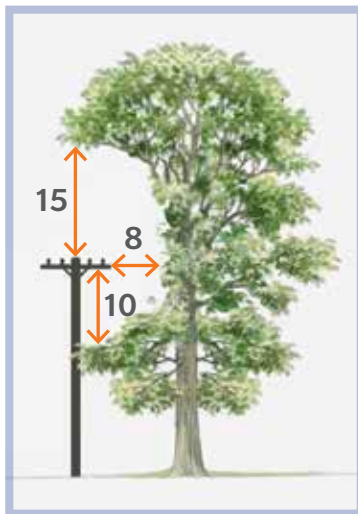
## DISTRIBUTION Vegetation Management

Our program includes:

### Scheduled Maintenance Trimming (SMT)

Eversource schedules tree work on over 9,000 miles of distribution lines each year. These are the power lines that generally run along neighborhood streets and state highways. Our distribution circuits are trimmed on a schedule of once every four to five years. Trees are trimmed along, below, and above wires to reduce the chances of tree-related power outages. Following the trimming specification for Scheduled Maintenance Trimming (SMT), Eversource removes limbs that are on average within 8 feet to the side, 10 feet below, and 15 feet above the wires.

All tall-growing tree saplings are considered brush and are removed. In vegetation management, brush removal occurs in an 8-foot area on either side of the power lines.



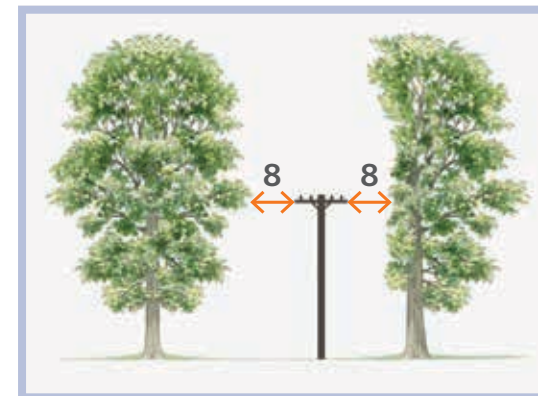
*Trees are trimmed along, below, and above wires to reduce the chances of tree-related power outages. The trimming specification for SMT removes limbs that are on average within **8 feet** to the side, **10 feet** below, and **15 feet** above the wires.*



*Limbs on many of New England's tree species grow several feet each year. To provide safe and reliable electric power, it is necessary to maintain enough clearance between trees and power lines to allow for four to five years of growth until the next SMT.*

### Enhanced Tree Trimming (ETT in Connecticut and New Hampshire) and Reliability Tree Work (RTW in Massachusetts)

Eversource does tree work on about 800 miles of distribution lines each year, focusing on critical circuits that provide electric power to large numbers of customers. Enhanced Tree Trimming (ETT) specifications in Connecticut and New Hampshire call for removal of all trees and branches above and below wires that are within 8 feet to the side of the power lines. In Massachusetts, Reliability Tree Work (RTW) specifications call for removal of all trees and branches above and below wires that are within 15 feet to the side and 25 feet above the power lines. Specific locations are identified by analyzing reliability reports for areas prone to tree-related power outages. ETT and RTW also involves removal of brush growing within 8 feet of either side of the power lines, as well as dead, dying, or diseased trees.



*ETT also involves removal of brush growing within **8 feet** of either side of the power lines, as well as dead, dying, or diseased trees.*



*During ETT, all trees and brush must be removed within **8 feet** of power lines. Removing limbs that overhang power lines helps to reduce power outages during storms with ice or heavy, wet snow.*

### Maintenance Enhanced Tree Trimming (METT)

Once an area has been cleared to specifications for Enhanced Tree Trimming (ETT) in Connecticut and New Hampshire, and Reliability Tree Work (RTW) in Massachusetts, Eversource maintains the original clearance zones through Maintenance Enhanced Tree Trimming (METT). Using METT, we trim regrowth and cut new sprouts that have grown since the original ETT and RTW clearing. METT is performed about every four to five years.



*Once cut, most New England hardwood tree species are quick to grow back. This new growth must be trimmed so it does not interfere with the clearance zone.*

### Mid-Cycle Trimming

Eversource will perform mid-cycle trimming in locations that cannot wait until the normal four- to five-year cycle. Trimming and removals are prioritized based on the tree conditions and location. Distribution circuits that have had a significant number of tree-related outages and that are not scheduled for SMT for one or more years are likely candidates for mid-cycle trimming or tree removal.



*Not all tree species grow at the same rate, so some must be trimmed before their next scheduled maintenance cycle.*

### Maintenance Enhanced Tree Trimming

is performed on a cycle that coincides with Scheduled Maintenance Trimming—about every four to five years.

**A mid-cycle program** includes trimming in problem areas to the Scheduled Maintenance Trimming specification in locations that cannot wait until the normal four- to five-year cycle.

## DISTRIBUTION Right-of-Way Vegetation Management

Distribution system rights of way connect distribution line substations to circuits that supply power to homes and businesses. Eversource typically purchases easement rights from landowners for locating and maintaining electrical facilities within the power line corridor.

Every four years, ground vegetation in distribution rights of way is maintained to provide clearance from the overhead power lines, and specialized equipment is used for side and overhead trimming. Certain low-growing shrub species, such as high-bush blueberry, are preserved within the right of way since they will not pose a problem to distribution line operation.

## Before We Cut: Scenic Roads and Landowner Permissions

Our vegetation management team takes pride in working with the communities we serve, including seeking at all times to preserve the natural beauty of New England's country roads with a commitment to ensure reliable electrical service.

While scenic roads are not exempt from distribution vegetation management, under this designation, a utility such as Eversource may not be allowed to cut or remove any tree without first getting the approval of the community's planning board and following a public notice and hearing.

*Since Scenic Road laws vary by state and community, a public hearing and town approval may be required for Eversource to trim along a road that has been designated as "scenic."*



## Trees: Eversource and Its Customers' Responsibilities

Eversource has a robust program for maintaining the vegetation around our distribution poles and wires. Here are the guidelines for Eversource's responsibilities, as well as those of the property owner.

### What Eversource does:

- Routinely assess and schedule maintenance tree work to clear vegetation that may pose a threat to reliability and safety.
- Remove only those branches that are in direct contact with Eversource service lines and are causing chafing or mechanical strain. Service lines are the electric wires that run from the utility pole to a home or business.
- Eversource will temporarily shut off power so that work can be performed safely and will restore power once tree work is finished.
- During scheduled vegetation management, Eversource tree contractors will remove wood and branches. However, at an owner's request, wood chips or cut wood resulting from any trimming that takes place on or near a customer's property, may be kept.

### Property owners' responsibilities:

- Customers are responsible for caring for and maintaining the trees on their property that could threaten to affect electric service from the pole to the home or business. If trimming or tree removal is needed, contact a qualified tree professional.
- If Eversource cuts down a tree that is located on a customer's property, stump removal will be the responsibility of the property owner.
- During unscheduled vegetation management or emergency situations, removal and disposal of any cut branches or trees on or near a customer's property is the customer's responsibility.

## Hazard Tree Removal

Trees that are dead, in poor health, or that have structural defects and the potential to fall on distribution or transmission lines are identified by Eversource for selective removal. Many of these trees are in decline and are overhanging the lines. Tree size is not an indicator of tree health. As trees mature, they reach an age where decay and defects have occurred but are not always visible. Eversource contracts qualified professional tree workers to remove hazard trees safely.



*Decaying or dying trees located near power lines are tagged for removal so that they won't fall and cause lengthy power outages.*

**Trees that are dead, in poor health, or that have structural defects and have the potential to fall on primary voltage lines are identified for selective removal.**



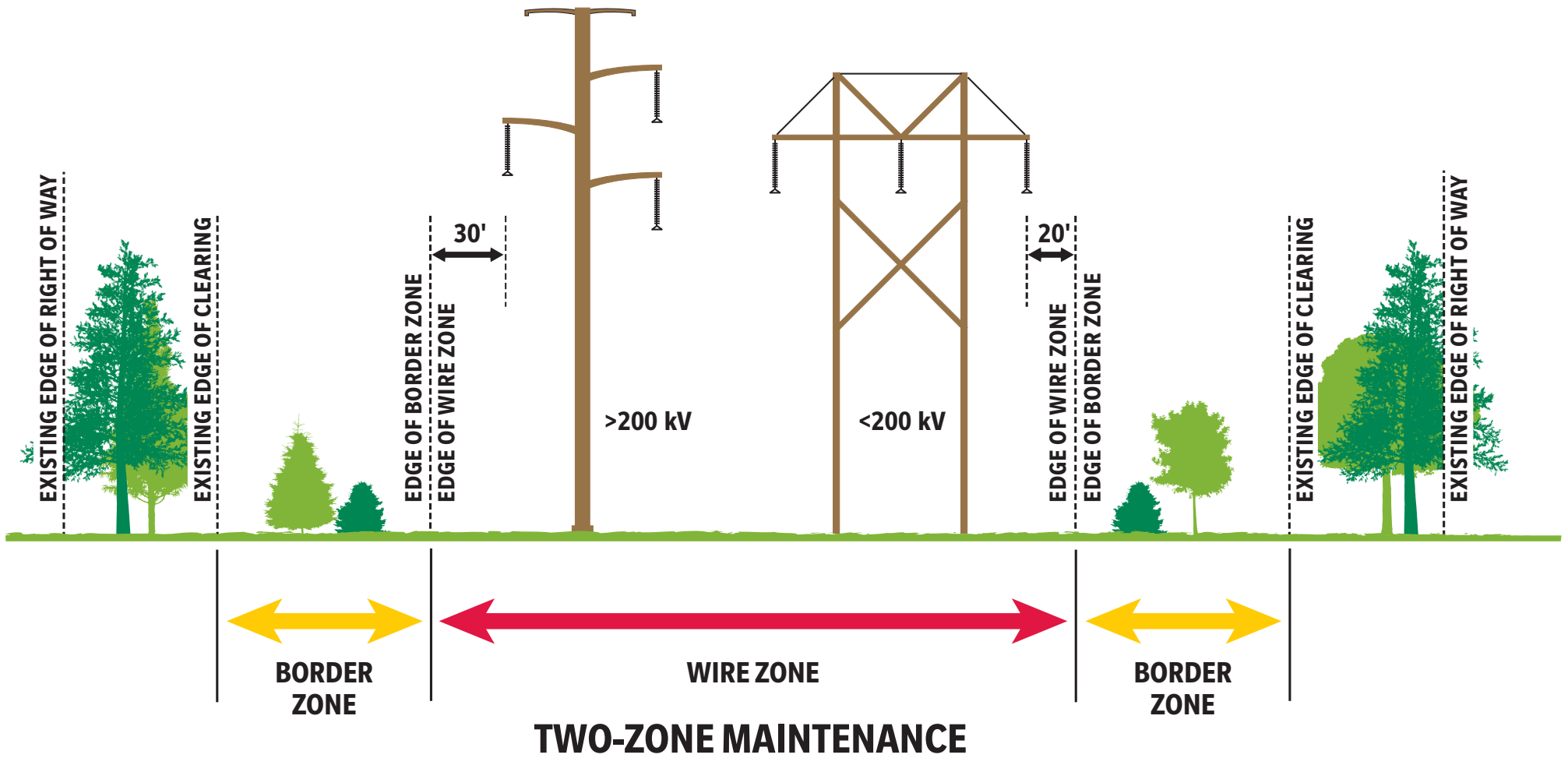
*Over time, the transmission corridor will be a sustainable, diverse habitat, with grasses, shrubs and trees that can safely coexist with transmission lines.*

## TRANSMISSION Right-of-Way Vegetation Management

Eversource manages nearly 2,300 miles of transmission rights of way in Connecticut, Massachusetts, and New Hampshire — corridors that carry electricity from a power source to our electric distribution system located along your community's main streets and back roads. Building and maintaining a safe, reliable transmission system that supports the environment is a top priority for Eversource. We follow industry-recognized best management practices by regularly pruning, cutting, and removing tall-growing incompatible trees and selected invasive species on all of our transmission corridors. Eversource typically purchases easement rights from landowners for locating and maintaining electrical facilities within the power line corridor.



# TRANSMISSION Vegetation Management Zones



## Transmission Vegetation Management Zones

At Eversource, our vegetation management team employs a **Wire Zone-Border Zone** method to maintain our transmission corridors. See chart on pages 14-15.

This method allows for the creation of two separate management zones. However, depending on the width of the right of way, as well as how many power lines are located along the corridor, there are times when only the Wire Zone method is employed.

- **The Wire Zone** is the area directly under the conductors, extending outward 20 or 30 feet, based on voltage, from the outermost conductors on each side. Within this zone, trees and brush are selectively removed to allow for the establishment and preservation of native, low-growing plant communities in non-lawn areas. Only established compatible species with a mature height of 15 feet or less at maturity may remain in the Wire Zone, depending on location.
- **The Border Zone** is the area from the edge of the Wire Zone to the limits of clearing on each side of the right of way. Within this Border Zone, incompatible trees and brush are selectively removed while trees and shrubs with mature heights below 25 feet and all other low-growing plant species may be preserved. Outside the cleared limits of the right of way, trees that have the potential to grow or fall into the energized facilities are pruned or removed. Permission from landowner will be obtained if tree trimming or removal is outside of the easement right of way.



*Eversources vegetation management includes preserving a vibrant habitat for wildlife while ensuring electric reliability.*



### Preserving Wildlife Habitats

In transmission rights of way where the Wire Zone-Border Zone method of vegetation management has been employed for many years, the resulting conditions provide a stable, open area with aesthetically pleasing grasses and shrub meadows. These habitats attract diverse wildlife, including many federal and state-protected species.

In addition, Eversource's control of tall-growing trees and invasive species supports the establishment of native, low-growing plant communities within the transmission rights of way that inhibit growth of incompatible species, resulting in:

- Less need to perform tree work between routine, planned maintenance.
- Reduced clearing requirements and less impacts on the right-of-way ecosystems.
- Reduction in incompatible plant populations during each successive maintenance period.
- Less overall herbicide application amounts over time, with proper management.

**Within right-of-way corridors,** vegetation must be kept clear of major power lines for reliable service.

## Planting for Success and Safety: The Right Tree in the Right Place

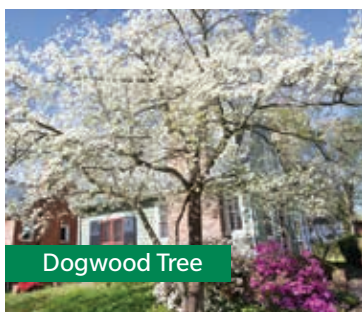
When planning to plant a tree near a distribution line or transmission system right of way, it is important to know how tall and wide the tree species will develop. Selecting the right tree for the right place will help avoid power outages and the need to continually trim the tree away from the lines.

### Distribution System Planting Guides

You can help keep Eversource **distribution lines** free of vegetation interference by planting low-growing trees and shrubs near the lines and planting tall-growing trees at a distance. In addition:

- **Plant smaller shrubs and trees (under 30 feet at maturity)** adjacent to distribution lines. Good choices for our New England climate include several varieties of cherry, crabapple, dogwood, and plum trees, as well as hawthorn and viburnum shrubs.
- **Plant medium-sized trees and shrubs (30 to 50 feet at maturity)** at least 30 feet away from distribution lines. These include: Columnar beech, American holly, European hornbeam, and Katsura.

*With proper planning, you can plant certain tree species near power lines that will not require trimming to maintain safe clearance.*



Dogwood Tree



Crabapple Tree



Blueberry Bush



Hydrangea Bush

- **Plant large trees (more than 50 feet high at maturity)**, such as oak, maple, spruce, and pine, at least 50 feet away from distribution lines.

You can find more information on proper planting for vegetation management by visiting Trees Are Good ([www.treesaregood.com](http://www.treesaregood.com)) and the Utility Arborist Association ([www.utilityarborist.org](http://www.utilityarborist.org)).

**PLEASE REMEMBER:** For your safety and to protect underground utilities, be sure to dial **8-1-1** before you dig. For more information, visit [call811.com](http://call811.com).

### Transmission System Planting Guides

There are many plants that are acceptable for planting within the Wire and Border Zones of a transmission right of way. To allow for access, inspection and maintenance of the transmission facilities, new plantings should not be placed directly under lines or be within 10 feet of a structure or supporting wire. Acceptable vegetation that may be planted or remain within the right of way depends on the transmission facilities present, the number of lines, location of the lines, width of the right of way, the topography and other environmental factors.

Generally, grasses, flowers, ferns, low-growing shrubs and trees under 15 feet in height at maturity may be in the right of way. If the right of way is wide enough and the location of the lines centered, small shrubs and trees under 25 feet in height at maturity may be permissible in the Border Zone. Vegetation that is compatible may still need to be removed during construction or maintenance activities, or in the event of emergency restoration or repair.

Please note that each property is unique, and plantings may need to be evaluated on a case-by-case basis. When purchasing plants to place in a transmission right of way over your property, please review the description that comes with the plant. Pay close attention to the mature height of the plant, or check with a knowledgeable person at the store for plant growth characteristics. There are many varieties of the same plant species that may have very different full-growth heights. Vegetation management specialists from Eversource are also available to answer questions about planting within the right of way.

## Community Involvement

Tree trimming and removal are needed for power reliability. Balancing the natural beauty of your community and the environment is also a top priority of Eversource's vegetation management team. We are actively involved in the Arbor Day Foundation's mission to "plant, nurture, and celebrate trees," as well as its conservation and education programs.

In addition, Eversource partners with:

- Professional organizations to host tree care training, including Connecticut Tree Protective Association, Massachusetts Tree Wardens and Foresters Association, and New Hampshire Arborists Association.
- Massachusetts Department of Conservation and Recreation for tree planting grants for local communities.
- American Chestnut Foundation by contracting a tree service to assist in its pollination efforts to counter chestnut blight.
- New Hampshire Department of Resources and Economic Development for an educational utility arboretum in Portsmouth.



*Eversource has helped develop educational utility arboretums that demonstrate which type and size of trees can be safely planted near and under power lines and equipment.*

Eversource has also partnered with the New Hampshire Department of Resources and Economic Development for an educational utility arboretum in Portsmouth, and the University of Massachusetts for an educational utility

arboretum on the Amherst campus. Eversource also has a utility arboretum at its Legends Drive location in Hooksett, New Hampshire. With trees being the leading cause of power outages, the utility arboretums provide students, tree wardens, municipal leaders, landscape architects and the public examples of the wide variety of trees that can be safely planted near and under utility equipment.

## For Your Safety

- **Electric lines running from the utility pole to a home or business are energized and dangerous.** Never attempt to prune trees or branches around them. Our crews may remove branches or limbs that are in direct contact with Eversource service wires located between an Eversource pole and the residence if there is significant chafing or mechanical strain. (Service wires are engineered for leaf and minimal branch contact.)
- **Don't attempt to cut down trees or branches that are near power lines.** Contact a qualified professional tree contractor of your choice. Eversource may temporarily remove pole-to-house lines so that contractors can perform their work safely.
- **Prevent children from climbing trees or electrical equipment that are anywhere near power lines.**
- **If a tree branch breaks off and lands on a power line, stay clear and contact Eversource immediately.**



## Contact Us

For complete information on **Distribution System** vegetation management issues, call us at:

**1-800-286-2000** in Connecticut

**1-800-592-2000** in Eastern Massachusetts

**1-877-659-6326** in Western Massachusetts

**1-800-662-7764** in New Hampshire

For complete information on **Transmission System** vegetation management issues, call us at:

**1-888-673-9943**

Or, visit us on the web at: **Eversource.com**

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