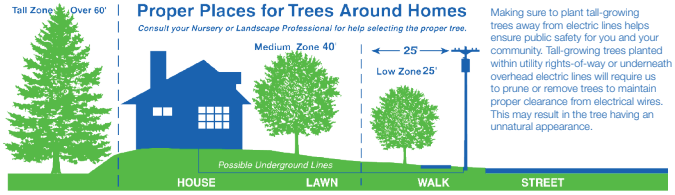
nationalgrid

For our residential customers in New York

Trees and Your Electric Service

Proper Places for Trees Around Homes

Consult your Nursery or Landscape Professional for help selecting the proper tree.



Making sure to plant tall-growing trees away from electric lines helps ensure public safety for you and your community. Tall-growing trees planted within utility rights-of-way or underneath overhead electric lines will require us to prune or remove trees to maintain proper clearance from electrical wires. This may result in the tree having an unnatural appearance.

Trees that grow over 60 feet in height
Use large types of trees here, but plant them at least 35 feet away from the house.

Trees that grow no taller than 40 feet
This zone is used to decorate or frame your house. Select trees first, then plant shrubs to complement the trees.

Trees that grow less than 25 feet in height
This zone ends 25 feet away from electric utility wires.

Important Considerations

When Selecting and Planting Trees

Determining where to plant a tree is a decision that should not be taken lightly. There are many factors to consider before planting. When planning what type of tree to plant, remember to look up, as well as down, to determine where the tree will be located in relation to both overhead and underground utility lines. The location of these lines will have a direct impact on your tree and planting site.

The ultimate mature height of the tree must be within the available overhead growing space. Proper tree species selection and placement will avoid future utility line conflicts and help ensure reliable service.

To help you select a type of low-growing, utility-compatible tree species to plant, we've compiled a list of recommended species for your use. Download a copy from our Electric Safety section on our website **www.nationalgrid.com**, or contact our Distribution Forestry Department at **315-428-5987**. By selecting the "right tree for the right place," you'll not only add value to your property, but you'll help us avoid a future need to prune "the wrong tree in the wrong place."

CM4447 (6/23)



This is an important notice.
Please have it translated.

Este é um aviso importante. Quiera mandá-lo traducir.
Este es un aviso importante. Sirvase mandarlo traducir.
Avis important. Veuillez traduire immediatement.
Questa è un'informazione importante, si prega di tradurla.
Это очень важное сообщение. Пожалуйста, попросите чтобы вам его перевели.
Đây là một thông báo quan trọng. Xin vui lòng dịch thông báo này.

Managing Vegetation to Ensure Electric Service Reliability

Trees and Electric Reliability

We serve over 1.6 million customers along 36,000 miles of electric distribution lines in New York that deliver the power you need and rely upon. Trees are an integral part of our life. We estimate that our service lines are exposed to over 12 million trees. Trees can help you save energy when properly located, but are also a leading cause of electric service interruptions by contacting and damaging our overhead electric facilities. Inevitably, conflicts between trees and overhead electric lines that develop must be addressed to ensure your safety and service reliability.

Our Tree Pruning Program

At National Grid, we share your concern and appreciation for trees. We recognize their value to you and your community. Diseased or damaged trees, tress with structural defects, poor performing species and trees growing in the wrong place frequently cause power outages when they contact our overhead electric lines. Our vegetation management program addresses trees along selected distribution feeder circuits typically on a five- to seven-year cycle. Our professional utility arborists periodically review these feeders and adjust our schedules to keep trees a safe distance away. Since 2000, we are proud to have repeatedly earned national recognition for our tree pruning programs. The National Arbor Day Foundation has recognized National Grid as a "Tree Line USA" utility, through our demonstration of excellence in tree care, annual worker training and our commitment to public education and community tree planting. We are among a select few utilities to earn this prestigious national honor.

Utility Pruning

The technique of "directional pruning" is most commonly used to attempt to naturally direct trees' growth away from overhead wires. This science based pruning practice was developed in conjunction with the U.S. Forest Service and is endorsed by the International Society of Arboriculture, the National Arbor Day Foundation and other tree care professionals around the world.

Our specifications are to maintain at least 10 feet of clearance from the primary lines next to, above and below the primaries in rural and unmaintained areas, and at least 15 feet of clearance next to, above and below the primaries in rural and unmaintained areas, while secondary electric lines require at least 18 inches of clearance on all sides. In order to properly conform to industry ANSI A300 pruning standards, it may be necessary to cut limbs beyond the distance specified to the correct points of limb attachment within the crown of the tree. Trees may initially look different following directional pruning, but this line clearance pruning practice allows trees to remain healthy. Additionally, in rural and unmaintained urban areas under or immediately adjacent to our lines, we will cut small, volunteer or intrusive trees and tall-growing brush to prevent future vegetation encroachment. Damaged, poorly structured trees or weak tree species may require additional pruning or even removal. Stump treatments with State and federally approved herbicides may be applied (when and where appropriate) to prevent the regeneration of undesirable species, thus helping to reduce costs and the need for repetitive work in the future.

The Benefits of Directional Pruning

Directional pruning considers the natural structure of the tree to reduce the number of cuts required. While the size of the cuts in the work area may seem larger than was common in the past, fewer cuts mean better wound isolation and 'healing' for the tree. The guiding principle of directional pruning is the "90-3-90" rule. Typically, 90 percent of the interfering branches can be removed by making three larger cuts within the tree crown 90 percent of the time. We work with the natural form of the individual tree as to where best to make our cuts, rather than simply shortening branches. 'Round-overs' of the tree crown are no longer acceptable or practiced.

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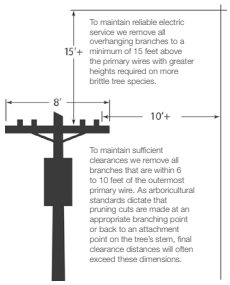
Primary Clearance Requirements



Proper Cuts

Crews will use the 'collar cutting' method to remove limbs. Properly placed cuts facilitate more rapid wound closure as the tree is better able to isolate the pruning cut. Research has found wound dressings to be ineffective and they are no longer applied.

Service Lines to Your Home or Business

We will remove limbs that are pressing on the service line to your property only at the time we perform cycle pruning of the feeders in your neighborhood, and we will assess the need for any additional clearance pruning of your service wire at that time. If you have a tree-line concern or question, please notify our customer service center at **1-800-642-4272**. Upon notice, we will send a qualified representative to investigate safety concerns caused by trees near our primary lines and report on our assessment at the time of inspection.

Cleanup and Wood Disposal

Crews will chip the branches they remove from trees in your yard as part of our cycle pruning program and rake the work area to pick up smaller twigs/debris and disperse sawdust. Pieces of wood that cannot be chipped will be cut into manageable lengths and left near the base of the tree. In off-road and "unmanaged" areas, wood and brush will be left 'windrowed' along the edge of the right-of-way to naturally decompose and provide shelter benefits for wildlife. Paths, drainage ditches and stream channels within the work area will be kept clear.

Tree Removals Near Primary Lines

In an effort to improve and maintain service reliability, we periodically inspect critical portions of our primary lines supplying your neighborhood to target 'at risk' trees that have a high probability of failure. These "hazard trees" that are considered for removal or additional pruning are typically beyond the edges of the areas we normally maintain. Not all trees require immediate attention, nor can all trees realistically be removed. We focus our efforts on the tree species and/or defects most likely to cause an outage in the most sensitive, critical portions of the distribution circuit.

Tree Removals Near Service Lines

We do NOT perform tree removals for customer service lines. New York State law requires that all tree work in the proximity of overhead electric facilities be completed by individuals trained to recognize the hazards of working near energized lines. Should you need to have tree work completed on your property near overhead electric lines, ask your arborist if their employees receive such training. If not, National Grid may provide the necessary services and, by law, can charge you and/or your contractor for the service provided.

Other Tree-Related Services

In emergency or storm situations, National Grid is responsible for ONLY clearing damaged trees and limbs from our electric lines and facilities in order to restore customer service, allow reasonable access for emergency restoration crews or to ensure future service reliability. The cleanup of generated storm debris remains the responsibility of the tree owner, whether public or private.

Who Does the Pruning?

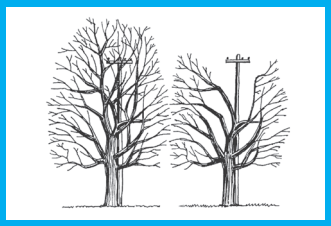
Either National Grid's forestry department and/or approved, utility tree contractors will be used to complete the work, conforming to the same nationally recognized industry ANSI A300 pruning standards, safety practices and quality.

In addition to ensuring service reliability, our management program strives to provide as much clearance as possible between trees and energized overhead lines for safety reasons, too. Open, visible lines help to protect our workers, customers and private contractors working near these lines by avoiding accidental contact. You can further safeguard yourself and your family by:

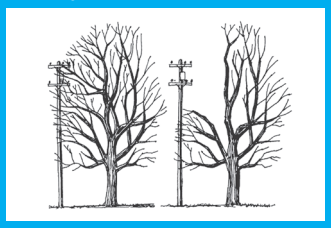
- Allowing our tree crews to complete their work to meet our clearance specifications
- Never operating tools or equipment within 10 feet of overhead lines
- Never allowing children to climb trees near overhead lines
- Never building a tree house in trees that are under or near power lines
- Always being sure to "look up before you go up" and always call **UDigNY** at **1-800-962-7962** before you plant a tree or dig on your property. Learn more at **udigny.org**
- Not planting large-growing trees under or near overhead lines. Also, please don't plant trees or shrubs within 5 feet of underground electric distribution equipment boxes on your property, to allow for emergency service access.

The following illustrations provide examples of the proper pruning for shade and ornamental trees.

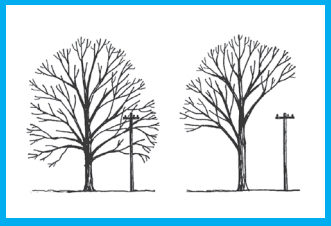
Through Pruning



Side Pruning



Under Pruning



Protect Your Trees and Your Service

We're active at local and state levels to educate communities, professionals and individuals about the critical role that selecting "the right tree for the right place" has in protecting property and ensuring reliable electric service. Taking steps to select and plant the appropriate species and ensure adequate future clearance from overhead electric service lines also helps avoid unwanted tree pruning or removal.

Keeping tall-growing trees safely distanced also helps protect homes, buildings and power lines from property damage and electric service outages resulting from heavy snow, ice and severe windstorms.

For more information about selecting and planting the right tree near power lines, please visit the Electric Safety section of our website at **www.nationalgrid.com** to download a list of appropriate trees to plant *("How To Avoid Tree and Utility Conflicts")*.

Thank You for Your Help and Cooperation

We appreciate your understanding and cooperation. Together we can work towards ensuring safe, reliable electric service and still enjoy the beauty, benefits and value of trees.





For National Grid's residential customers in New York

Trees and Your Electric Service

Understanding National Grid's Responsibilities

Staying Connected

Your electric service is important to you…and it's important to National Grid, too! When you call our Customer Service Center (**1-800-642-4272**) with a concern or question about your trees, service lines or to report a possible outage, we may need to ask you several clarifying questions. Your observations will help us determine how your request is handled, which makes our questions and your answers very important. While our vegetation management programs strive to maintain safety and service reliability clearances around our conductors, many tree-related outages can be caused by a limb, branch or an entire tree falling onto the wires from outside our pruning maintenance zone.

We are concerned not only about the trees next to and around our conductors but also those adjacent to and beyond our facilities. During National Grid's scheduled maintenance tree pruning operations, our crews and staff arborists perform visual inspections for any possible types of hazard tree conditions that may exist so that appropriate actions can be taken to reduce or prevent such tree caused outages through their failure at the time of our work.

We've prepared this publication to help you understand how our Forestry Department's vegetation management program works and the types of electrical equipment that may be involved.

Please review this information carefully and use it when making calls with your tree-related questions and concerns. By using the proper terminology to describe your circumstances, you help our representatives meet your needs more efficiently and effectively. Thank you!

Our Policies, Procedures and Services

To help ensure safe, reliable electric service to our customers, National Grid has an extensive vegetation management program to control the growth of trees near our electric facilities:

Tree Pruning Program

Our Forestry Department schedules tree pruning on distribution feeder lines in your area on a cyclical basis every five to seven years, following recognized industry "best practices" - ANSI A300 Standards. We will attempt to notify you by letter, door hanger or crew visit when work is scheduled in your area. When we perform this routine maintenance work, our crews prune to maintain and provide a specified clearance around our overhead primary and secondary wires. In addition, we look for any hazardous tree conditions and remove those that may fail and cause an outage for you and your neighbors. Lastly, we check service entrance wires (service drops) to our customer's property and perform any pruning that may be necessary to minimize abrasion to those wires from tree branches.

Customer Calls for Tree Pruning

As noted above, all spans of primary, secondary and service wires are checked at the time our cyclic maintenance pruning is performed on the feeder. We do NOT perform pruning outside of our set schedule to help us maintain a cost efficient operation throughout our broad service area.

We will dispatch crews to remove large, damaged limbs that are pressing on your service lines and also to assess instances where you've raised questions about tree conditions around our primary wires.

If additional pruning work beyond what we provide in our scheduled maintenance program is desired, you may hire an electrically qualified tree contractor (see "Choosing a Qualified Contractor" below) to complete that work at your own expense.

Tree Removal Requests

National Grid does NOT perform tree removals near service lines to your homes or business. This work can be done by an electrically qualified

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ĐÂY LÀ MỘT BẢN THÔNG CÁO QUAN TRỌNG XIN VUI LÒNG CHO DỊCH LẠI THÔNG CÁO ẤY

Это очень важное сообщение. Пожалуйста, попросите чтобы вам его перевели.

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tree contractor who employs workers specifically trained to work within 10 feet of electrical hazards. Ask your contractor when quoting the work to verify that he or she is electrically qualified and trains their employees to recognize and safely work around electrical hazards. National Grid may disconnect your service entrance wires from the structure for your contractor, if necessary. Requests for such disconnections require you or your contractor to contact our Customer Service Center (**1-800-642-4272**) at least five days in advance of the work.

Additionally, by law, any time you are planning to remove (or prune) trees that are near our primary lines, we must be notified. Please contact our Customer Service Center (**1-800-642-4272**) at least five days in advance of your planned work so that a Forestry Department representative can visit your property to assess the potential for any safety hazards or outage risks.

Storm Damaged Trees

A storm can damage a few trees in a small neighborhood, or it can affect thousands across a wide area. Regardless of the size of the area impacted, National Grid is responsible for ONLY clearing storm damaged trees and/or limbs from our electric lines and facilities in order to:

- restore service,
- allow reasonable access for emergency service restoration, and
- ensure future service reliability.

The disposal, processing and cleanup of storm generated tree debris removed from, or over National Grid facilities, or to provide emergency access, remains the responsibility of the owner of the tree (or trees). REMEMBER…during or after any storm event, all downed wires should be considered energized and dangerous including telephone, fiber optic and cable TV wires as they may be in contact with energized electric wires due to facility damages beyond your property and out of your view.

Basic Equipment Identification - what's that on the pole?

When you call a National Grid Customer Service Center, using the proper terms to describe the equipment involved can help us respond to your emergency or request more efficiently:

UTILITY LINE: Any overhead (or buried) wire, including electric, cable television, fiber optic or telephone.

ELECTRIC LINE: Any wire carrying electricity through the distribution system that runs from a power generating plant to the meter at your house.

There are typically three types of wires:

1. Primary Electric Wire: The electric wires at the top that run from pole to pole, usually along the street, though they may run through backyards in urban areas or off-the-road in rural areas.Where more than one utility line is mounted on the same pole, the primary electric wires are the highest.

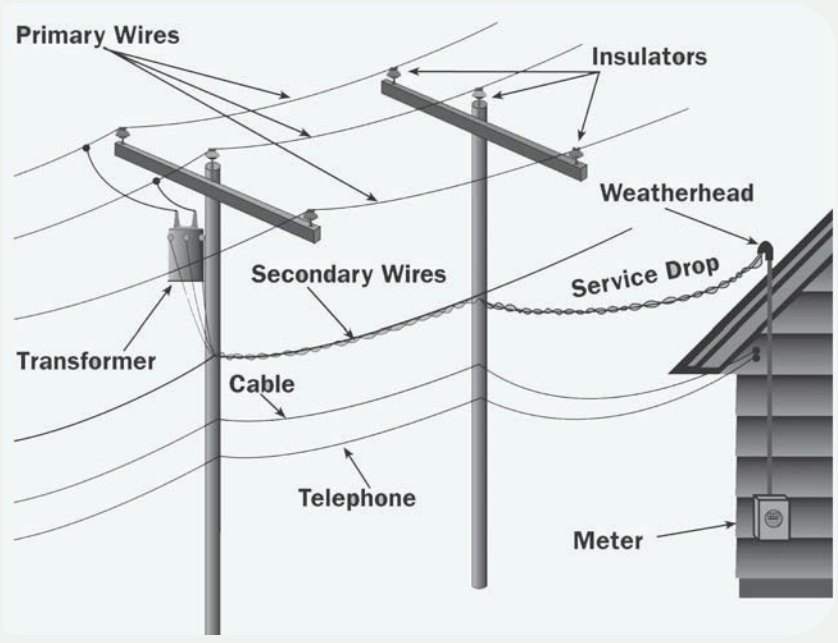
2. Secondary Wire: The electric wires that run from pole to pole and are located six to eight feet below the primary electric wires. They are found below the transformer and carry household voltage to the individual service lines to your home.

3. Service Line, Service Drop or Service Lateral: The electric wires that run from the pole to the meter at your residence. The most common service drop (typically) is known as triplex wire consisting of a bare center wire with two black, coated wires wrapped around it. On older homes, the service drop may consist of three small wires running parallel to each other from the transformer pole or secondary tap to an attachment point on your residence.

ELECTRIC TRANSFORMER: A gray or black colored, barrel shaped object mounted on the pole below the primary electric wires which reduces the primary voltage down to household voltage levels.

INSULATOR: The porcelain support used to insulate the wires from the pole or points of attachment. All electric lines require an insulator to attach the wires to the pole or to your residence at the weatherhead.

WEATHERHEAD: Found on many homes, a weatherhead is a protective metal or plastic service attachment located at the point where the overhead electric line is connected to your building.



Any line that attaches to your weatherhead and/or insulator and meter is an electrical line.

ELECTRIC METER: A device, typically located on the outside of your home below the service line and weatherhead that measures the amount of electricity that is consumed.

When You Call...Your Information is Key

While the work of our Forestry and Line crews helps maintain your service reliability, you… as a National Grid customer, are an essential part of that effort!

When you call our Customer Service Centers about trees or limbs on your property, please give our representative as much information as possible. You'll help us target our response and call for the most appropriate actions in order to help you. When calling, please be prepared to answer these questions:

- Do you have power?
- Are your lights dim or flickering?
- Is the limb or tree on the line from the pole to your house or from pole to pole?
- Is the tree or limb arcing or burning?

Safety

Keeping a Safe Distance

As per New York State's High Voltage Proximity Act, any time you or your contractor will be working within 10 feet of any overhead line, you or your contractor are responsible for notifying National Grid at least five working days before performing this work. A qualified utility representative will review your concern and discuss any necessary precautionary actions. Depending on the particular case and location, a tree crew may be dispatched to provide sufficient clearances, or you may be instructed to hire an electrically qualified tree contractor. However, by law, we may charge you and/or your contractor for providing any safety related services that may be required.

If our crews arrange for tree pruning or removal to provide these clearances at your request, you may be required to sign a release authorizing the work before we can begin. Once limbs or trees have been safely cut away from electric lines to provide the required clearance, all resulting wood, brush, debris and cleanup remains the responsibility of the property owner. National Grid does NOT remove these materials or any resulting stumps. If a property owner denies us the ability to provide State mandated services to properly prune or remove trees at the time of our scheduled work or upon our request, your refusal will be recorded and documented. You may then be asked to sign a statement (to be filed with our claims office) accepting responsibility and financial liability for any-and-all resulting damages and/or claims related to future service interruptions or damages to our equipment or facilities caused by your tree (or trees).

For Your Protection

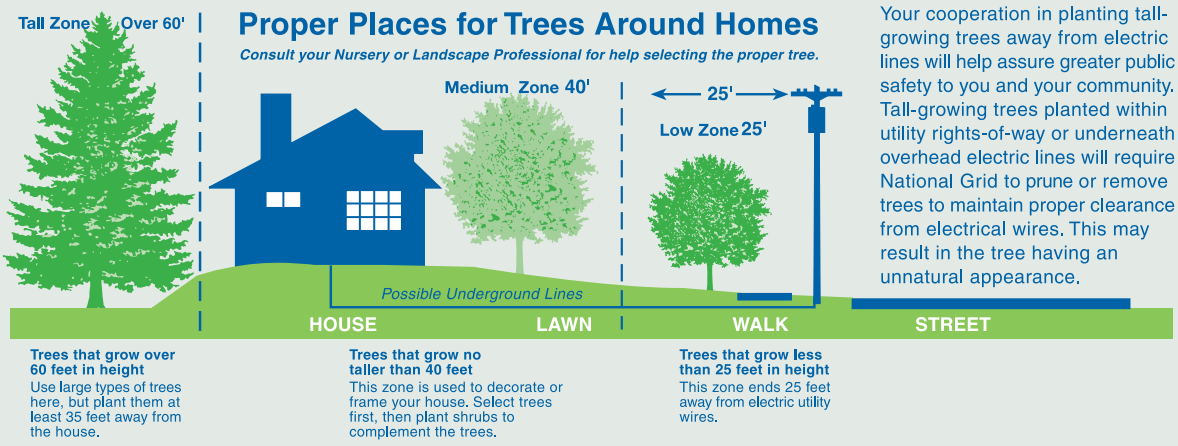
Choose a Qualified Contractor
If you are planning to have tree work completed on your property, hiring a qualified tree-service professional is important to ensuring the safety of your family, home, neighbors…and our facilities. Make sure the company or individual you hire is properly insured, electrically qualified (if conditions warrant) and preferably a member of an industry professional trade organization, such as the International Society of Arboriculture or Tree Care Industry of America.

Plan Ahead for the Future

When it comes to planting trees—what you do now can affect generations to come! You can help protect your home and community from future tree caused electric outages and minimize damage to our lines and your own property by planting tall-growing trees well away from electric lines and electric rights-of-way. By choosing to plant low-growing, utility compatible tree species under or near overhead electric lines, you also help us minimize the need for scheduled maintenance pruning and reduce the potential for future tree caused electric service interruptions in your neighborhood.

Remember…electric and gas utility lines may be underground and where you least expect them! Tall-growing trees planted on top of, or adjacent to these lines, may present a future hazard and eventually will require removal. Be sure to contact "Dig Safely New York" at **800-962-7962** at least 2 full working days before any excavating work or you dig to plant trees.

Cornell University Cooperative Extension Service has identified over 100 utility compatible, low-growing trees that are suitable for planting near/under overhead electric lines. For information, please contact Customer Service at **1-800-642-4272** or visit the "Safety" section of our website at (**www.nationalgridus.com**) to download the list of trees ("How to Avoid Tree and Utility Conflicts") and the proper places to plant them. Please… plant the right tree…in the right place!



Your cooperation in planting tall-growing trees away from electric lines will help assure greater public safety to you and your community. Tall-growing trees planted within utility rights-of-way or underneath overhead electric lines will require National Grid to prune or remove trees to maintain proper clearance from electrical wires. This may result in the tree having an unnatural appearance.

When Selecting and Planting Trees

Determining where to plant a tree is a decision that should not be taken lightly. Many factors need to be considered prior to planting. When planning what type of tree to plant, remember to look up, as well as down, to determine where the tree will be located in relation to both the overhead and underground utility lines. The location of these lines will have a direct impact on your tree and planting site.

The ultimate mature height of the tree to be planted must be within the available overhead growing space. Proper tree species selection and placement will assure the avoidance of utility line conflicts in the future.

To help you select a type of low growing, utility compatible tree species to plant, National Grid has compiled a list of recommended species for your use. Download a copy from our Safety Section on our website **www.nationalgridus.com**, or contact our Distribution Forestry Department at **315-428-5987**.

By selecting the **"right tree for the right place"**, you'll not only add value to your property, but you'll help us avoid a future need to prune **"the wrong tree in the wrong place".**

National Grid is an international energy delivery company. In the U.S., National Grid delivers electricity to approximately 3.3 million customers in Massachusetts, New Hampshire, New York and Rhode Island, and manages the electricity network on Long Island under an agreement with the Long Island Power Authority (LIPA). It is the largest distributor of natural gas in the northeastern U.S., serving approximately 3.4 million customers in Massachusetts, New Hampshire, New York and Rhode Island. National Grid also owns over 4,000 megawatts of contracted electricity generation that provides power to over one million LIPA customers.

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CM4450 Responsibilities 02/09

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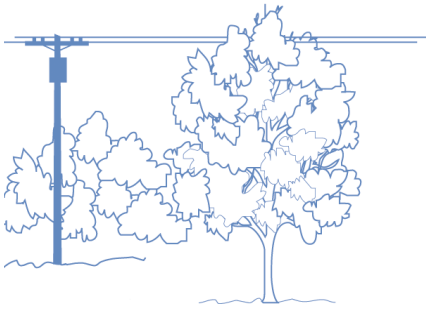
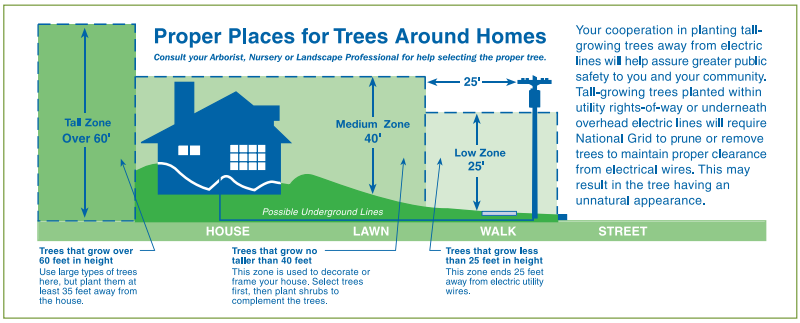
How to avoid tree & utility line conflicts when selecting and planting trees

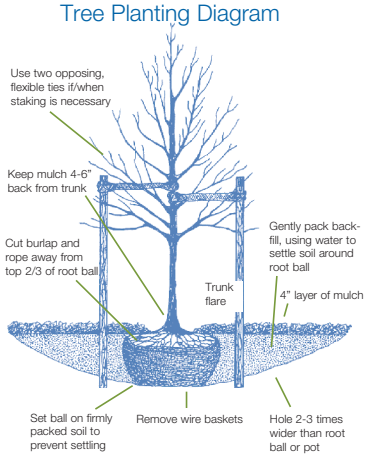


Determining where to plant a tree is a decision that should not be taken lightly. Many factors need to be evaluated prior to planting. Before planting, make sure to consider the tree's full growth potential to see if the location of the tree will affect any overhead or underground utility lines and rights-of-way. The ultimate mature height of the tree to be planted must be within the available overhead growing space. Proper tree species selection and placement will assure the avoidance of or minimize tree and utility line conflicts in the future.

To assist you in making a decision on what type of low-growing tree species to choose, where to place it to avoid potential conflicts and how to plant it properly, National Grid is providing this fact sheet for your use. This will help assure the tree you plant will not only add beauty to your home, your community and benefits the environment, but also contributes to future electric service reliability by avoiding overhead and/or buried lines.



Correct planting instructions



1. Dig a shallow hole, 2-3 times wider than the width of the ball/pot, but no deeper than the depth of the ball/pot.
2. Lift and set the tree carefully into the center of the hole on firm soil. **Be sure the top of the trunk flare at the base of the tree is even with grade level, or even 1-2" higher to allow for possible settling. Carefully pull back some soil from the base of the tree to assure the trunk flare and upper layer of roots have not been covered with excess soil. Remove any excess soil back to the original soil level across the top of the ball or pot and raise the ball or pot to the proper level by adding soil to the bottom of the hole.**
3. Straighten the tree and back fill the hole 1/3 of the way. Remove all rope or twine from the base of the tree and top of the root ball; cut and remove the upper 2/3 of the burlap and remove the wire basket. Be sure to remove all plastic/nylon twine and synthetic burlap as this material will not rot away and may strangle tree roots. Plastic pots need to be removed completely while peat pots need only be sliced down the sides. Carefully loosen the outer roots from potted containers.
4. Backfill and pack the soil firmly and uniformly in layers around the hole, watering as you go to settle the soil. It is not necessary to amend the soil or add fertilizers at this time. Use the excess soil to create an earthen berm (low earth wall) around the ball on the surface just past the root ball to help retain water. Apply a 2-4" layer mulch to the entire area under the tree to help maintain moisture, keeping the mulch 4-6" from the base of the tree.
5. Stake the tree for support, only if absolutely necessary, and do so with 2-3 stakes and wide, soft, loose ties which will allow the tree to move with the wind encouraging faster establishment. Water the tree as needed once the upper soil surface has dried well into the Fall. Do NOT cut the main central leader; prune only dead or damaged limbs; do NOT apply tree paints.

For more information, call our Distribution Forestry Department at **315-428-5987**, or visit **www.nationalgridus.com**.

Before You Dig

Upstate NY
Dig Safely
811 or 1-800-962-7962
www.digsafelynewyork.com
at least two working days prior to excavation

Massachusetts and New Hampshire
811 or 1-888-344-7233
www.digsafe.com
72 hours (except weekends and holidays)

Rhode Island
811 or 1-888-344-7233
48 hours (except weekends and holidays)

Recommended Small Trees For Planting Under Low Overhead Utility Lines or Confined Spaces

Urban Trees Recommended for USDA Planting Zones 6 and Below

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Common name	Scientific name	Zone	Mature Height**	Crown Shape	Comments
Trident Maple	Acer buergerianum	6a	20'-25'	round	variable Fall color (yellow-red), low branched, requires pruning for street tree use; salt tolerant
	'Street Wise'	6a	20'-25'	oval	can be trained to single stem; new growth reddish-purple at first; burgundy Fall color
Hedge Maple (CU-SS)	Acer campestre	5a	20'-35'	round	adapted to compaction and range of soil Ph; will sustain severe pruning; can become invasive
	'Carnival'	5a	20'-35'		varigated foliage
	'Elegant'	5a	20'-35'	upright	vigorous grower; compact form; ascending habit
	'Elsrijk'	5a	20'-35'	narrow upright	narrow crown form; leaves mildew resistant
	'Evenly Red'	5a	20'-35'		superior red Fall color
	'Field Maple'	5a	20'-35'		more uniform growth habit than species
	'Jade Patina'	5a	20'-35'		dark green leaves; exceptional cold tolerance (not affected by stem frost crack)
	'Louisa Red Shine'	5a	20'-35'		leaves emerge red than fade to reddish-green
	'Metro Gold' (aka 'Panacek')	5a	20'-35'	narrow upright	superior gold Fall color; tighter form than 'Queen Elizabeth'
	'Nanum' (aka 'Compactum')	5a	20'-35'	upright	semi-dwarf, bulbous habit (often grafted on a standard trunk)
	'Postelense'	5a	20'-35'		foliage emerges yellow then matures to green
	'Pulverentum'	5a	20'-35'		varigated foliage
	'Royal Ruby'	5a	20'-35'		new foliage purplish-red
	'Schichtel's Upright'	5a	20'-35'	narrow oval	narrower upright crown form
	'Schwerini'	5a	20'-35'		new purple foliage eventually turns green
	'St. Gregory'	5a	20'-35'	pyramidal	strong central leader, smooth bark; new reddish-green foliage turns a rich, dark green
	'William Caldwell'	5a	20'-35'	fastigate	Fall foliage turns orange/red when planted in acidic soil (not yellow as species)
Miyabe Maple (CU-SS)	Acer miyabei	5a	35-45'	upright oval-round	slow growing, dwarf Sugar Maple with tight conical canopy
	'Rugged Ridge'	5a	35-45'	upright oval-round	more deeply furrowed bark than species; use where taller poles; not likely full height on streets
	'State Street' (aka 'Morton')	4	35-45'	upright oval	good uniform branching, dark green foliage; gold-yellow Fall color
Sugar-Cone' Maple	Acer saccharum 'Sugar-Cone'	3b	<30'	pyramidal	slow growing, dwarf Sugar Maple with tight conical canopy
Amur Maple	Acer tartaricum ssp. ginnala	3a	15'-20'	rounded	often multi-stemmed, but can be trained/specified for single stem; variable Fall color; cold hardy
	'Embers'	3a	15'-20'	rounded	bright red seeds, red Fall color
	'Emerald Fir'	3a	15'-20'	rounded	compact, slow growing; rounded crown
	'Flame'	3a	15'-20'	rounded	red seeds, firery red Fall color
	'Red Fruit'	3a	15'-20'	rounded	brilliant red seeds
	'Red Rhapsody' (aka 'Mandy')	3a	15'-20'	rounded	lustrous dark green leaves; brilliant red Fall color
	'Rugged Charm'	3a	20-28'	upright oval	15' crown width; compact form; yellow-orange to red Fall color; clusters of white flowers in Spring
	'Beethoven'	4	20'-25'	narrow columnar	10' crown width, central leader; red/yellow Fall color
	'Mozazam' (aka 'Mozart')	4	15'-20'	oval	15' crown width, central leader; red/yellow Fall color; red samaras
Serviceberry	Amelanchier spp.	3b	20'-30'	oval	edible fruit, early white flowers, red to yellow Fall color; can be small tree to large multi-stem shrub
	'Autumn Brilliance'	3b	15'-25'	oval	heavy flowering, bright red-orange Fall color; excellent heat/drought tolerance; resists leaf spot
(possible A. lamarki selection)	'Ballerina'	3b	15'-25'	upright	spreading branches; pendulous flowers; bronze Spring leaves turning dark, glossy green
	'Cole's Select'	3b	15'	rounded	15' wide crown; glossier, smaller green leaves; orange-red to red Fall color
	'Cumulus'	3b	15'-25'	columnar-pyra-midal	12-18' wide crown; faster growing; yellow to orange-scarlet Fall color; may root sucker
	'Princess Diana'	3b	25'	oval	bright red, long lasting Fall color; may be single or multi-stemmed
	'Robin Hill'	3b	20'	narrow	12-15' wide crown; heavy flowering, pink buds, early bloomer; bronze tinged leaves
	'Rubescens'	3b			pink flowers in Spring
(possible A. canadensis cultivar)	'Spring Flurry'	3b	25-30'	upright oval	15' wide crown; strong central leader; green Summer foliage; orange Fall color
	'Reflection' (aka 'Refzam')	3b	25'	upright oval	20' wide crown; vigorous growth and similar traits as the species
(possible A. laevis cultivar)	'Majestic'	3b	25-30'	narrow oval	vigorous growth; new dark, reddish-orange foliage turning to dark green; heat resistant
(possible A. canadensis cultivar)	'Tradition' (aka 'Trazam')	3b	25-30'	oval	good branching, strong center leader; heavy fruiting; grey-green foliage; good early bloom
American Hornbeam	Carpinus caroliniana	3b	30'	rounded, spreading	"muscled" bark, good orange-red Fall color; slow to establish; difficult to transplant; native
	'Ball O' Fire' (aka 'J.N. Globe')	3b	15'	rounded	15' wide crown; compact; superior Fall color
	'Firespire' (aka 'J.N.Upright')	3b	20'	upright, narrow	10' wide crown; tight, upright form; impressive orange-red Fall color
	'Native Flame'	3b		upright oval	notable bright red Fall color
	'Palisade'	3b	25'	narrow, upright oval	12' wide crown at maturity; dense, tidy growth habit
Eastern Redbud (CU-SS)	Cercis canadensis	5b	20'-35'	open, spreading	edible, pink, very early Spring flowers; typically multi-stemmed; heart shape leaves; native
	'Ace of Hearts'	5b		rounded	compact form, dense dome-shaped canopy; semi-glossy leaves; zig-zag stems
	'Alba'	5b	20'	open, spreading	white flowers
	'Appalachian Red'	5b		open, spreading	magenta pink bids, dark reddish-pink flowers
	'Flame'	5b		open, spreading	double flowered
	'Forest Pansy'	5b-6	20'	open, spreading	typically smaller, slower growth; cold sensitive; red-purple Spring leaves, bronze Summer foliage
	'Hearts of Gold'	5b		open, spreading	new leaves emerge red then turn chartreuse then fade to green
	'Northern Strain'	5a		open, spreading	more cold hearty; limited availability
	'Rising Sun'	5b		open, spreading	similar to 'Hearts of Gold', more colorful; new leaves red, fading to orange to yellow to green
	'Royal White' (aka 'Royal')	5b		spreading	white flowers, earlier blooming; more compact; larger flowers than 'Alba"
	'Ruby Falls'	5b		weeping	purple foliage; weeping form
	'Silver Cloud'	5b		spreading	irregular, splotchy varigated foliage;
	'Whiters Pink Charm'	5b		open, spreading	brighter pink flowers than the species
Corneliancherry Dogwood (CU-SS)	Cornus mas	5a	20'	round - oval	multi-stemmed; showy early small yellow flowers; heavy fruiting (litter may be a nuisance!)
	'Alba'				white fruit
	'Aurea'				gold to chartreuse maturing foliage
	'Flava'				yellow fruit
	'Golden Glory'		20'	oval	heavy bloomer, larger fruit; red-purple Fall color; not as hardy as others forms
	'Variegata'				white varigated foliage
	'Aureo-Elegantissima' (aka 'Tricolor')				leaf edges bordered in yellow, green and pink
	'Fructu Volcano'				purple fruits

Common name	Scientific name	Zone	Mature Height**	Crown Shape	Comments
	'Macrocarpa'				larger fruits
American Smoketree	Cotinus obovatus	5b	20'-30'	oval -round	low branching, multi-stemmed tree; 6-10" light, puffy, pyramidal Spring flower; blue green foliage
	'Red Leaf'				superior, reliable Fall clor
	'Grace'	5b	20'	round	more tree-like form; maroon to purple foliage; (can be spec'd for muti or single stemmed tree)
Thornless Cockspur Hawthorn (CU-SS)	Crataegus crus-galli inermis	4a	20'-25'	round	white flowers, bright red persistent fruit; thornless
	'Cuzam' (aka 'Crusader')		15'	round	faster growing; 12-15' wide; reportedly disease resistant
Washington Hawthorn (CU-SS)	Crataegus phaenopyrum	4b	20'-30'	round	white flowers; thorny; reddish-purple Fall color ; insect & disease prone; 'usually' multi-stem
	'Fastigata'		30'	columnar	columnar habit; 20' wide crown
	'Princeton Sentry'		30'	columnar	similar to 'Fastigata' but nearly thornless
	'Vaughn'		20'-30'	oval	hybrid cross with C. crus-galli; long lasting red fruit; prone to rust disease
Winter King Hawthorn (CU-SS)	Crataegus viridis 'Winter King'	5a	20'-30'	oval	thorny, white flowers, purple and scarlet Fall color, fruit persists; more disease resistant
Imperial Thornless Honeylocust (CU-SS)	Gleditsia triacanthos inermis 'Impcole'	4b	30'	broad round	open, spreading form; good branch angles; small leaves; yellow Fall color; only short variety
Goldenraintree (CU-SS)	Koelreuteria paniculata	5b	30'-40'	irreg. rounded	pest free; pyramidal, mid-Summer, yellow flower clusters; specify straight stem when ordering
	'Rose Lantern'		30'-40'	irreg. rounded	pink fruits
	'September'		30'-40'	irreg. rounded	later flowering
	'Summerburst'		30'-40'	irreg. rounded	foliage more glossy; better crown symmetry & heat resistance than species
Amur Maackia (CU-SS)	Maackia amurensis	4a	20-30'	rounded upright	4-6" long white pendulous flower clusters; grey-green leaves turn to olive green; pest free
	'MaacNificent'		20-30'	vase like	vigorous, upright branching; silvery, pubescent foliage in Spring
	'Starburst'		20-30'	rounded upright	denser crown, more uniform & vigorous than species
	'Summertime'		18-20'	rounded upright	smaller than the species 12-15' wide crown
Flowering Crabapple (CU-SS)	Malus spp.	4b			various cultivars (some may be disease resistant):
	'Adams'	4a	20'	round	buds deep pink, flowers deep pink, profuse; leaves green with a red tint; 5/8" persistent red fruit
	'Adirondack'	4	18'	vase	carmine buds to white flowers; bright red fruit 1/2" diameter, dark green leathery leaves
	'American Salute'	4	18'	upright oval	rose-red flower, cherry red 3/8" fruit; maroon-red foliage; 10' wide crown
	'American Spirit'	4	15-18'	round	red buds, rose-red flower, persistent red fruit; 15-18' wide crown; superior disease resistance
	'American Triumph'	4	20'	upright columnar	dark red single flower, dark burgundy-red fruit; reddish-purple leaves; 12' wide crown
	baccata 'Jackii'	3a	20'	round	flowers are white fragrant and early, fruit is deep red-purple; glossy green foliage
	'Cardinal'	4	16'	broad spread.	flowers bright pink-red purple, 1/2" sparse fruit deep dark red, leaves deep glossy purple-red
	'Centurion'	4	20'	narrow oval	flowers rose red, bright red persistent 5/8" diameter fruit, leaves reddish changing to green
	'Coralburst'	4	15'	round	coral pink buds, double rose flowers, bronze 1/2" diameter fruit; resistant to most diseases
	'Donald Wyman'	4	20'	round	pink buds, flowers white, abundant, 3/8" fruit glossy bright red, abundant
	'Doubloons'	4	18'	dense oval	carmine buds, flowers white, double fruit 3/8" bright lemon-yellow, abundant; deep green foliage
	'Firebird'	4	8'	round spreading	red buds, flowers white, fruit 3/8" bright red & very persistent, abundant; dwarf of 'Sargent'
	floribunda	4b	20'	round	flowers pink fading to white, profuse, 1-11/2" diameter, fruit yellow-red; disease resistance
	'Golden Raindrops'	4	20'	vase like	white buds & flowers; 1/4" diameter yellow fruit; fine textured, deeply cut foliage
	'Harvest Gold'	4	22'	wide vase like	white buds & flowers; 1/2" diameter yellow fruit; fair scab & fire blight resistance
	'Liset'	4a	15'	columnar	flowers pink-red 11/2" diameter, fruit dark red, leaves reddish
	'Madonna'	4	20'	upright	pink bud to double white flower; fruit golden red; leaves emerge bronze to green; disease resistance
	'Ormiston Roy'	4a	20'	oval - round	pink-rose bud, white flower, yellow 3/8" diameter persistent fruit, green leaf
	'Pink Princess'	4	8'	low, spreading	rose pink flower, deep red 1/4" fruit; purple foliage becoming bronze-green; disease resistance
	'Prairifire'	4	20'	oval - round	crimson bud, pink-red flower, orange-red persistent 1/2" fruit, leaves age to red-green
	'Professor Sprenger'	4	20'	oval - round	pink bud, white fragrant flower, orange-red persistent 1/2" diameter fruit, green leaf
	'Purple Prince'	4	20'	round	carmine bud, rose red flower, persistent maroon 3/8" fruit, purple-bronze leaf
	'Red Jewel'	4	15'	oval	pink-white bud, white flower, persistent bright red 1/2" diameter fruit, green leaf
	'Robinson'	4	25'	oval	crimson bud, deep pink flower, dark glossy red 3/8" fruit, red aging to bronze leaf
	'Royal Raindrops'	4	20'	upright spread.	pink bud, bright pinkish flower; persistent red 1/4" fruit; purple cut-leaf, orange-red Fall color
	'Sentinel'	4	18'	narrow oval	red buds, white-pink flower, persistent bright red 1/2" fruit, dark green glossy leaf
	'Silverdrift'	4	20'	round	pink buds, white-pink flower, persistent orange 3/8" fruit, bright green glossy leaf
	'Snowdrift'	4	18'	narrow oval	red buds, white flower, small persistent red fruit; good disease resistance
	'Strawberry Parfait'	4	18'	vase	red buds, large pink flower, yellow 3/8" fruit, red aging to green leaf
	'Sugartyme'	4	18'	oval	pink bud, white fragrant flower, red persistent 1/2" diameter fruit, green leaf
	x zumi 'Calocarpa'	4a	20'	round	bright red, persistent 3/8" diameter, leaves large green, dense canopy
Hop Hornbeam	Ostrya virginiana	3b	30-50'	oval	pest free; slow growing; yellow Fall color; tolerates some shade; grayish-brown, exfoliating bark; use only where taller pole/wire sites; Northeast native
Persian Parrotia (CU-SS)	Parrotia persica	5	20'-30'	pyra.-round	relatively pest free; red-purple new foliage to green in Summer, yellow-red in Fall
Accolade Flowering Cherry	Prunus 'Accolade' (P. sargentii x P.subhirtella)	5a	20'-25'	round-vase	deep rose-pink bud, semi-double pink flowers, attractive bark; more disease resistant
Snow Goose Cherry	Prunus 'Snow Goose'	5	20'-25'	upright	white flowers, foliage green aging to yellow-red in Fall; 1/4" blue-black fruit; good disease resistance
Edgewood Callery Pear (CU-SS)	P. calleryana x P. betulaefolia 'Edgedell'	4	30'	round	leaves emerge with purple tint, silvery green through Summer, red-purple in Fall
Jack Callery Pear (CU-SS)	Pyros calleryana 'Jaczam'	4	15'-20'	oval; dense	glossy green to gold-red leaves in Fall; 1/2" yellow-green fruit
Jill Callery Pear (CU-SS)	Pyrus calleryana 'Jilzam'	4	15'-20'	round	olive green to gold leaves in Fall; 1/2" yellow-green fruit
Valiant Callery Pear (CU-SS)	Pyrus calleryana 'Valzam'	4	25'-30'	upright-pyram.	glossy hunter green to crimson red leaves in Fall; 1/4" tan fruit
Black Locust (CU-SS)	Robinia pseudacacia 'Globe'	4b	20'	round; dense	late Spring flowering (possibly flowerless); spineless; medium to blue-green leaves
	'Bessoniana'	4b	30'	oval	late Spring flowering; essentially spineless; medium to blue-green leaves; central leader
	'Umbraculifera'	4b	20'	umbrella-like	dwarf form; few-no thorns, sparsely flowered; prone to borers & ice damages
Swedish Mountain Ash (CU-SS)	Sorbus intermedia	5b-6a	25-35'	round	green upper leaf/grayish white undersides; orange-red Fall color
Columnar Oakleaf Mountain Ash (CU-SS)	Sorbus thuringiaca	3b	25-35'	oval-pyram.	dark green upper leaf/whitish undersides; rusty orange-yellow Fall color
	'Fastigiata'	3b	25-35'	narrow pyram.	more narrow pyramidal crown form
Japanese Tree Lilac (CU-SS)	Syringia reticulata	3a	20'-25'	oval	large cream colored flowers in late June; good for use in large containers

...continued

Common name	Scientific name	Zone	Mature Height**	Crown Shape	Comments
	'Ivory Silk'	3a	25'	round	dense; compact; heavy flowering; fast growing; cherry-like bark
	'Regent'	3a	20'-25'	upright	glossy leaves; heavy pure white flower producer
	'Snowcap'	3a	15-20'	rounded	compact for; heavy creamy-white flowers
	'Snowdance'	3a	25'+	upright	very dark, glossy leaves; blooms earlier than species; no seed head production
	'Summer Snow'	3a	16'	round	glossy leaves; heavy flowering
Summer Sprite Littleleaf Linden (CU-SS)	Tilia cordata 'Halka'	4	15'-20'	narrow pyram.	may grow slower than the species; fragrant, mid-Summer flowers (attracts bees!)
Wireless Japanese Zelkova (CU-SS)	Zelkova serrata 'Schmidtlow'	5	35'	broad vase	exfoliating bark; less likely than species to have poor branch structure; Elm-like appearance
	'City Sprite'	5	20'	upright	as above, smaller in form; red Fall foliage

* Trees over 30' in mature height should be planted at least 25' away from the edge of overhead wires; trees that mature over 25' and planted directly underneath electric conductors may require minor pruning in the future to avoid wire conflicts to maintain required clearances

(CU-SS = Trees suitable for planting in Cornell University Structural Soil mix)

Tree list summarized from RECOMMENDED URBAN TREES: SITE ASSESSMENT AND TREE SELECTION FOR STRESS TOLERANCE; 2015 (revised) Urban Horticulture Institute, Dr. Nina Bassuk, Deanna Curtis, B.Z. Marranca & Barb Neal; Cornell University, 134-A Plant Science Bldg., Ithaca, NY 14853 nlb2@cornell.edu; urbanhort@cornell.edu

For more information and pictures of these trees, please go to the Cornell Woody Plant Database at: http://woodyplants.cals.cornell.edu

For more information, call our Distribution Forestry Department at **315-428-5987**, or visit **www.nationalgridus.com**.

For our customers in upstate New York

nationalgrid

Trees and Your Electric Service

What to know about trees and your electric service

Trees enhance the quality of life in every community — by converting carbon dioxide to oxygen and keeping the air clean. However, diseased and/or weakened trees, along with trees planted too close and growing near power lines, can contribute to power outages when they come in contact with overhead electric lines. At National Grid, our goals are to ensure everyone's safety and deliver reliable electric energy to our customers.

Since 2000, we are proud to have repeatedly earned national recognition annually from the Arbor Day Foundation for our tree pruning programs as a 'Tree Line USA' utility. We have demonstrated excellence in tree care practices, annual worker training, a commitment to customer and public education as well as supporting community tree planting through "right tree-right place" guidance. We are among a select few utilities to earn this prestigious honor.

For information about our tree pruning programs, please see the following:

- **Safety around trees and electric wires**
- **Combat invasive tree-killing insects and help protect the environment**
- **National Grid's routine tree pruning responsibilities and schedule**
- **Homeowner tree pruning responsibilities**
- **Identifying your electric service**
- **Tree cleanup and wood disposal**
- **Digging in? Call UDigNY**
- **Planting trees? Plan ahead and choose plantings wisely**
- **Frequently asked questions**
- **Choose a qualified contractor**

Safety around trees and electric wires

When you're enjoying the outdoors, remember to play it safe and avoid dangerous overhead electric lines. Children and adults should not climb, play or work in trees that are near electric wires.

For safety reasons, always treat all wires as high-voltage wires, energized and dangerous to touch, whether such wires are covered or bare, on the pole or fallen to the ground.

Important Note: Whenever you see a downed line, consider all downed wires to be energized and dangerous, including telephone, fiber optic and cable TV wires. They may be in contact with energized electric wires that are not within your view. Always report downed lines immediately by calling **1-800-867-5222** or **911**.

For our customers in upstate New York

nationalgrid

Trees and Your Electric Service

Combat invasive tree-killing insects and help protect the environment.

Look for and report these symptoms:

Emerald Ash Borer – small "D" shaped exit holes on ash trees, tree death from the top down and "S"–shaped larval galleries under the bark.

Asian Long-Horned Beetle – 3/8 inch round exit holes (the diameter of a pencil) on the trunk and branches, sawdust and sap on and around the trees, round pits in the bark (egg niches), often on maples, horse chestnut, birch and willow trees.

To protect your property, only purchase firewood that has been harvested locally or heat treated to kill insect and disease pests. For more information and to report infestations: Visit **www.dec.ny.gov** or call **866-640-0652** (email: **firewood@gw.dec.state.ny.us**).

National Grid's routine tree pruning responsibilities and schedule.

To ensure safety and electric service reliability, National Grid schedules tree pruning in your area every five to seven years, adhering to the industry best practices.

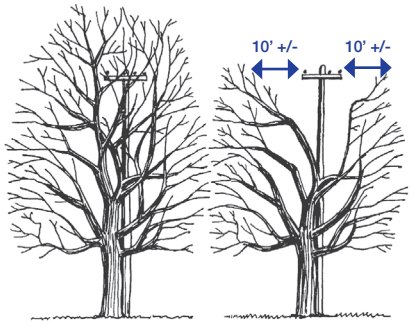
We use a technique called "directional pruning" in order to naturally "train" and direct growth away from the wires. This method directly benefits the health of the tree as it reduces disease and decay entry points. We also make our pruning cuts at the branch bark ridge (not flush to the stem or limb), which helps promote proper wound closure. This pruning practice was developed in conjunction with the U.S. Forest Service and is endorsed by the International Society of Arboriculture, the Arbor Day Foundation and other tree-care professionals around the world.

We hire only qualified, experienced line clearance tree contractors to do this work.

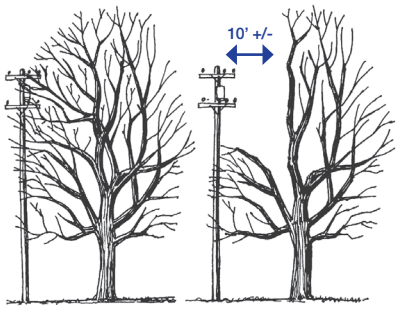
Working as efficiently as possible, we schedule pruning by geographic location. Unless there is a significant tree hazard affecting the electric wires in your area, we do not perform tree pruning outside of our pruning schedule. Our pruning is limited to tree branches that affect electric wires only. We do not prune trees or branches that affect individual customer service lines or phone and cable wires.

Before pruning, we attempt to notify metered customers by letter, door hanger or a National Grid contractor crew visit. We prune trees to maintain a minimum of 10-15 feet of clearance from our power lines.

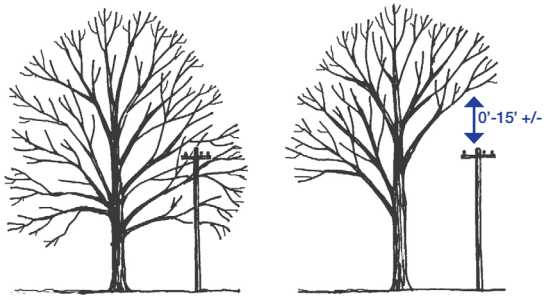
The following illustrations provide examples of the proper directional pruning for shade and ornamental trees:



Through Pruning



Side Pruning



Under Pruning

As part of our cyclic tree pruning process, crews will chip the branches they cut from the trees in your yard. Wood pieces that cannot be chipped will be cut into manageable lengths and left near the base of the tree.

In areas that are natural and not actively groomed or maintained, wood/brush may be cut (or mowed) and left to naturally decompose and contribute to wildlife habitat.

Often, customers need additional pruning beyond what we provide as part of our scheduled work. We do not prune other branches or remove trees that affect individual customer service lines. *(See Homeowner tree pruning responsibilities on next page.)*

For our customers in upstate New York

nationalgrid

Trees and Your Electric Service

Homeowner tree pruning responsibilities.

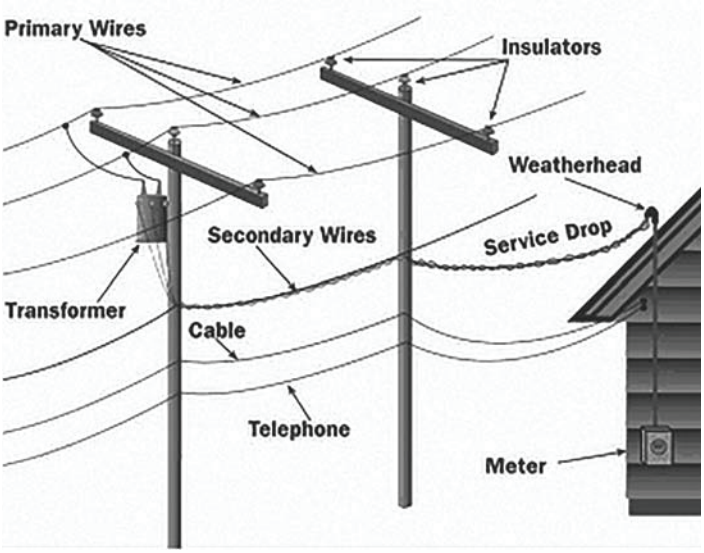
Often customers need additional pruning beyond what we perform. Working as efficiently as possible, we schedule pruning by geographic location. Unless there is a significant tree hazard affecting the electric wires in your area, we do not perform tree pruning outside of our schedule. If additional pruning work beyond what we provide in our scheduled maintenance program is desired, you may hire an electrically qualified tree contractor *(see Choosing a Contractor)* to complete that work at your own expense. We will work closely with you and your qualified contractor if you require power turned off or other protective safety measures *(see Frequently Asked Questions)*.

We appreciate your cooperation during our routine maintenance work. Property owners are sometimes hesitant to authorize tree pruning on their property. If a property owner does not permit us the ability to properly prune or remove trees, the property owner may be asked to sign a statement accepting responsibility and financial liability for any and all resulting damages and/or claims related to future electric service interruptions or damage caused by their tree(s).

Identifying your electric service.

How can you tell an electric line from a telephone or cable line? Here are a few important items you should know:

- High-voltage electric distribution lines are always at or near the top of the pole.
- These lines are usually found along neighborhood streets, but they may also be located in back yards, across open fields or wooded areas.
- If more than one utility line (telephone or cable) is mounted on the same pole, the high-voltage electric distribution lines will still be at the top of the pole.
- A low-voltage electric line is located several feet below the high-voltage line.
- The low-voltage line attaches to your service weather head (a protective device is located where the line is connected to your residence.)
- The diagram at right should also help you to identify electric lines.



Tree cleanup and wood disposal.

As part of our routine, scheduled cyclic tree pruning, crews will chip the branches they remove from trees in your yard. Wood pieces that cannot be chipped will be cut into manageable lengths and left near the base of the tree.

In areas that are not actively maintained, wood/brush may be left to naturally decompose and provide shelter benefits for wildlife. In some areas where it's possible, standing (or previously cut) brush may be mowed to facilitate faster decomposition. Paths and drainage ditches within the work area will be kept clear of cut brush or limbs.

Storm removal or cleanup

During a storm, our crews are focused on cutting and clearing trees from our lines to restore power as quickly and safely as possible. While we will remove broken utility poles and damaged electrical equipment, homeowners are responsible for removing all broken and/or damaged trees and limbs resulting from the storm, including those that we remove from your trees to expedite service restoration.

Important Note: Whenever you see a downed line, consider all downed wires to be energized and dangerous, including telephone, fiber optic and cable TV wires. They may be in contact with energized electric wires that are not within your view. Always report downed lines immediately by calling **1-800-867-5222** or **911**.

For our customers in upstate New York

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Trees and Your Electric Service

Digging in? Call UDigNY

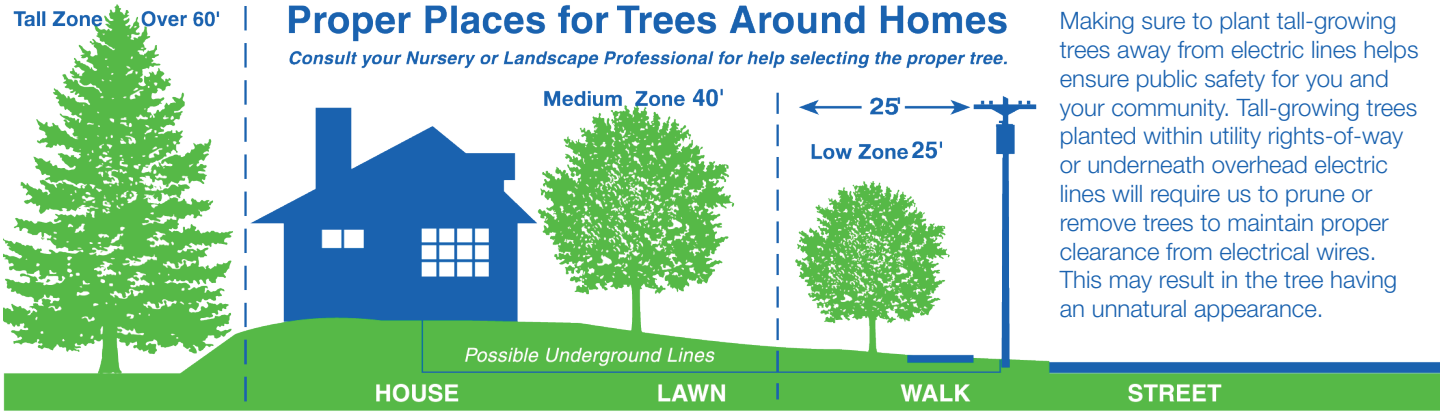
Deciding where to plant a tree requires serious thought, because electric and gas utility lines may be underground and where you least expect them. Tall-growing trees planted under, near, or adjacent to utility lines may present a future hazard as they mature and eventually will require serious pruning and/or removal.

Call **UDigNY** at **811** or **800-962-7962** at least two full working days before digging to plant or plan any excavation work. UDigNY notifies National Grid and other participating utilities so that we can mark our underground wires, pipes or cables to prevent personal injury, property damage and service interruptions. To learn more, visit **udigny.org**.

Planting trees? Plan ahead and choose plantings wisely

Please plant tall-growing trees away from utilities lines to protect you and your community. For information on selecting the right tree and planting near power lines, see *How to Avoid Tree and Utility Line Conflicts* at **nationalgridus.com**, under Electric Safety.

Also, please ensure that you do not plant tall growing trees or large, dense shrubs within 5 feet of any underground or aboveground electric distribution equipment. Their placement can interfere with equipment access or for needed maintenance or emergency repairs and may necessitate removal.



Making sure to plant tall-growing trees away from electric lines helps ensure public safety for you and your community. Tall-growing trees planted within utility rights-of-way or underneath overhead electric lines will require us to prune or remove trees to maintain proper clearance from electrical wires. This may result in the tree having an unnatural appearance.

Trees that grow over 60 feet in height
Use large types of trees here, but plant them at least 35 feet away from the house.

Trees that grow no taller than 40 feet
This zone is used to decorate or frame your house. Select trees first, then plant shrubs to complement the trees.

Trees that grow less than 25 feet in height
This zone ends 25 feet away from electric utility wires.

Important Note: Before planting, make sure to consider a tree's full growth potential to see how the location of the tree will affect any overhead or underground utilities lines and rights-of-way.

We work closely with homeowners and their contractors to temporarily disconnect service for safe pruning or tree removal. Please call us at **1-800-642-4272** at least five days in advance of the work. By NYS law, there may be a charge to you or your contractor for such "make safe" procedures.

For our customers in upstate New York

nationalgrid

Trees and Your Electric Service

Frequently asked questions

Will National Grid prune or remove trees that are near the service line connected to my home?

We are responsible for routine pruning around our high-voltage wires to maintain safe, reliable service to our customers.

Homeowners are responsible for pruning tree branches near the low-voltage service line to their individual home.

Many customers choose to remove these trees to reduce the risk that their tree may damage their home or electric service.

National Grid is available to work closely with your contractor to make the area safe for tree pruning or tree removal. In some cases, rubber sleeves can be placed over service wires. In other cases, it is necessary for us to temporarily disconnect your service lines from your home so that your contractor can safely prune or remove trees. By NYS law, there may be a charge to you or your contractor for such “make safe” procedures.

Your contractor damaged my property—who should I call?

Please call Customer Service at **1-800-642-4272** to report any damage.

National Grid did not prune around the wires that I was concerned about?

National Grid is responsible only for pruning around high-voltage electric wires. Our forestry professionals assess each customer’s situation and will prune trees and branches that pose a risk to our high-voltage electric distribution wires and overhead operations equipment. If a cycle prune for an area is scheduled, your pruning may occur at a later date. If the tree poses a risk to your individual service line, your telephone or cable wires, please understand that National Grid is not responsible for pruning or removing those trees/branches.

National Grid disfigured my tree.

We use directional pruning in accordance with accepted national tree pruning standards to prevent trees from coming into contact with high-voltage wires. We apologize that while the tree’s appearance may be compromised, the procedure promotes proper wound closure and is only conducted to preserve public safety and prevent power outages.

Choose a qualified contractor

New York State law requires that all tree work in the proximity of overhead electric facilities should be completed by individuals trained to recognize the hazards of working near energized lines.

If you need tree work near overhead electric lines on your property, ask your contractor if his/her employees receive such training. If not, National Grid can arrange the needed services, and may charge you and/or your contractor for the service provided, under NYS law.

Tree removals and pruning near service lines to your property should be done by an electric-qualified tree contractor and workers specifically trained to work within 10 feet of electrical hazards.

If hazards to your service are present or you are planning to prune or remove trees near high-voltage wires, you may request that National Grid disconnect your service entrance wire temporarily from your home for your contractor. Please contact Customer Service at **1-800-642-4272** at least five days in advance of the work. A forestry department representative will visit your property to assess the potential for any safety hazards or outage risks.

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CM4509 UNY (7/23)

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Important Information for Homeowners Along Transmission Rights-of-Way

As an important part of our commitment to safe and reliable electric service, our Vegetation Management Department has scheduled pruning along the electric transmission right-of-way on or adjacent to your property. This work includes selective side pruning and/or removal of “danger trees” and will be done by licensed and experienced contract tree crews.

Side pruning consists of reducing the tree’s crown and/or selectively pruning branches from trees along the right-of-way corridor that pose an immediate or potential threat to the lines. Side pruning involves removing limbs to create a “rolled back” effect, directing tree growth away from the line.

Danger trees are those, on or off the right-of-way, that could contact electric lines if they fall or are cut. While we selectively prune whenever feasible, we must remove trees that pose an imminent or potential threat to public safety and service reliability.

Please be assured that our crews attempt to reduce the visual impact of this work and maintain aesthetic quality as much as possible. Cut tree branches are diced close to the ground and left to decompose. Stumps are left as low as possible. Logs are cut and piled along the right-of-way edge following danger tree removal.

Additionally, we make every reasonable effort to notify nearby residents of all National Grid vegetation management activities.

continued >

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The contractor doing the work in your area is:

_____

The contractor’s representative is:

_____

and may be contacted at:

_____

The electric company identification for the right-of-way is:

_____

If you have any questions/concerns, please contact the contractor representative above.

Whenever you have questions about planned tree work and overhead lines, let us know at **1-800-642-4272** or **transmissionforestry@nationalgrid.com**.

Learn more at **ngrid.com/treetrimming**

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CM4717 (6/23)

Work is scheduled for the transmission line right-of-way that is adjacent to or crosses your property.

This brochure provides landowners with information about vegetation maintenance activities used by National Grid.

National Grid continues to promote safety near **all** transmission lines and respects the property of others by providing notification of our activities and by addressing landowner concerns as they arise.

National Grid

National Grid provides the transmission of electric power to 3.5 million customers across New York State and New England.

Vegetation maintenance is critical to ensuring electric reliability and safety.

Regular patrols and periodic maintenance help to keep the lines free of vegetation that could potentially cause a power outage or endanger persons living or working near electric transmission lines.

> "...assuring trees remain clear of transmission lines is not only vital for service reliability it is a crucial public and worker safety issue."

Still have questions?

Customer Service
Upstate NY 1-800-642-4272
New England 1-800-322-3223

Or e-mail us at:
transmissionforestry@nationalgrid.com

Visit us at **www.nationalgrid.com** and connect with us on

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XIN VUI LÒNG CHO DỊCH LẠI THÔNG CÁO ẤY

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Пожалуйста, попросите чтобы
вам его перевели.

CM4729 (3/13) UNY Printed on recycled paper

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HERE WITH YOU. HERE FOR YOU.

Information for landowners along our transmission lines



www.nationalgrid.com

Transmission Line Rights-of-Way

National Grid has the legal responsibility to provide safe and reliable electric service. In both New York and New England, public service laws establish responsibility and accountability for providing efficient, safe and reliable power within certain quality parameters.

Trees and Transmission Lines

Trees and transmission lines are not compatible. Trees that grow too close to electric transmission lines can conduct electricity and provide a path to ground, potentially causing an interruption and other significant consequences. Trees do not have to physically touch an energized power line to be dangerous. Electricity can arc or jump from a power line to nearby vegetation.

In addition to causing an interruption, this can also cause a wildfire and is very dangerous. Electric current flowing through a tree can electrocute anyone in close proximity.

Therefore, assuring trees remain clear of transmission lines is not only vital for service reliability but it is a crucial public and worker safety issue.

Right-of-Way Floor Vegetation Management

National Grid utilizes a program called Integrated Vegetation Management (IVM) to establish and foster low-growing vegetative plant communities that, in turn, require minimal maintenance and create numerous benefits for the environment.

National Grid uses herbicides to selectively remove tall-growing tree species from the rights-of-way. The remaining low-growing plant communities provide a stable vegetative cover resistant to the re-establishment of tall-growing vegetation. This also provides improved access, erosion control and improved wildlife habitat.

The IVM program focuses on complete removal of tall-growing vegetation. Pruning or topping vegetation is a short-term measure that does not provide the same benefits as removal. Topped vegetation poses a higher risk to reliability, safety and does nothing to foster a stable, desirable plant community as the topped trees vigorously sprout back and shade out the desirable plants.

Right-of-Way Edge Danger Tree Program

Our goal is to continually improve service reliability. To this end, trees that are growing along the edges of the right-of-way corridors are periodically pruned or removed.

Targeted edge trees are those with hazardous structural defects (e.g., cracks, cavities, decay, poor limb attachments) or are species with a history of failure (e.g., poplars, white pine). Research and experience have shown that it is prudent to remove these trees before they cause an interruption.

As the work is carried out, our crews will make every reasonable attempt to protect private property. Disruption to livestock, roadways, soil, fences and gates are avoided as much as possible. Any damages are repaired within a reasonable amount of time after the disturbance.

Cut tree branches are diced close to the ground and left to decompose. Stumps are cut as low to the ground as practicable. Any useable wood, such as larger limbs and/or logs, remains along the right-of-way edge for the landowner.



Landowner Use of Transmission Rights-of-Way

Due to the potential safety and operational issues cited earlier in this brochure, it is imperative that National Grid manage its rights-of-ways to ensure that only compatible uses are allowed. Existing land uses such as cropland, gardens, lawns, pastureland and planting of low-growing trees and shrubs are compatible with our transmission line rights-of-way. However any new or expanded usage within any right-of-way requires the prior written authorization of National Grid. Please contact the Transmission Forester in your area to discuss plants that will be suitable for your site.

Unauthorized use of National Grid's transmission rights-of-way such as planting tall growing trees, cutting or pruning trees, constructing structures, stockpiling materials, excavating or operating heavy equipment all pose a threat to reliability as well as personal and public safety. Unauthorized use could result in the removal of structures or other personal property at the expense of the property owner.

We ask that prior to engaging in such activities on our transmission rights-of-way that landowners contact National Grid's Real Estate Department to discuss and review the proposed activity. This notification is required to prevent future dangerous conflicts with the electric transmission lines and possibly save lives.

Landowner Cooperation

Landowner cooperation is critical to the success of National Grid's vegetation management programs. In order to keep its transmission corridors safe and to prevent injury, property damage, environmental damage and unauthorized use of rights-of-way, National Grid attempts to communicate and cooperates with owners for crew access, maintenance activities, tree removal and security. National Grid also realizes the importance of understanding the needs and sensitivities of all property owners.

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Stay safe when working near or around trees and overhead wires



Trimming branches or taking down trees is dangerous work — even more so when done near overhead electric service lines. Electricity in a power line can travel through a tree and into the ground around the tree, causing serious injury or possible electrocution to anyone who is touching the tree or even just near it.

Choose a qualified contractor



New York State law requires that all tree work in the proximity of overhead electric facilities be completed by individuals trained to recognize the hazards of working near energized lines.

Tree removals and pruning near service lines to your property should be done by an electric-qualified tree contractor and workers specifically trained to work within 10 feet of electrical hazards.

If you need tree work performed near overhead electric lines on your property, ask your contractor if his/her employees receive such training. If not, National Grid can arrange the needed services, and may charge you and/or your contractor for the service provided, under NYS law.

Let us know

To take down a tree, workers must eliminate or minimize exposure to the hazards found at the tree and in the surrounding area.

If hazards to your service are present, or you're planning to have trees pruned or removed near the overhead service line to your home, you may request that National Grid temporarily disconnect your electric service for your contractor.

Please contact Customer Service at **1-800-642-4272** in advance of the planned work. A forestry department representative will visit your property to assess the potential for any safety hazards or outage risks.

Never touch downed power lines — always assume they are carrying live electricity and keep everyone away. Report downed lines immediately by calling National Grid at **1-800-867-5222** or by calling **911**.

For additional information about trees and power lines, contact us at **1-800-642-4272** or **transmissionforestry@nationalgrid.com**

▶ Learn more at **ngrid.com/treetrimming**

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Utility Worker Safety Reminder: State laws are in place to help protect utility workers while they are performing their job duties. Causing physical injury to, or assaulting, a utility worker is punishable by law, and penalties include potential jail time.

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We're working to improve reliability.

Notification of Vegetation Work



On behalf of our Vegetation Management department, _____ will soon conduct scheduled maintenance on the electric transmission right-of-way on or adjacent to your property.

The type of work to be done is indicated below:

❑ Integrated Vegetation Management (floor work—see back for details)

❑ Sideline Maintenance (see back for details)

Description of work:_____

_____

_____

If you have questions regarding this work, or a private water supply well on or within 100 feet of the right-of-way, please contact:

Name_____

Company_____Phone_____

❑ If this box is checked, a call back is needed

Date:_____ROW#:_____

continued >

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Program Descriptions

Integrated Vegetation Management (IVM)

IVM focuses on the removal of tall-growing trees and shrubs to encourage the establishment of a low-growing shrub population on the right-of-way.

Methods used include:

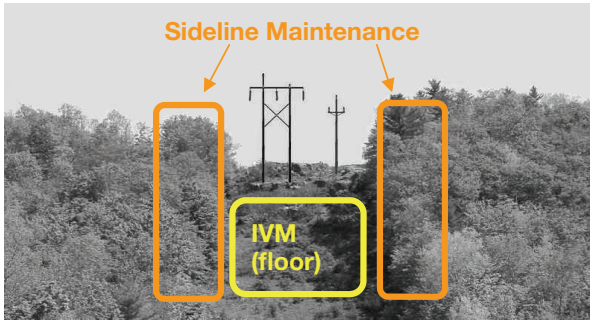
- Hand cutting with chain saws
- Mowing
- Selective herbicide application (applied to foliage or cut stump surface)

Herbicide use is regulated by federal and state statutes and regulations, which protect sensitive areas, such as:

- Surface Water Supplies
- Wetlands
- Public & Private Wells

Sideline Maintenance

This work consists of removing or pruning danger trees along the sides or edges of transmission line corridors.



Methods used include:

- Skidder bucket or street bucket
- Climbers (for areas inaccessible by equipment)

For more information about our programs and work scheduled for the current year, click on "Operations Documentation" in the following link:
ngrid.com/transmissiontree

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CM5453 (7/23)

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HERE WITH YOU. HERE FOR YOU.

Notification of Vegetation Work



On behalf of National Grid's Vegetation Management department, _____ will soon conduct scheduled maintenance on the electric transmission right-of-way on or adjacent to your property.

The type of work to be done is indicated below:

❒ **Integrated Vegetation Management**
(floor work—see back for details)

❒ **Sideline Maintenance** (see back for details)

Description of work:

_____

_____

_____

_____

If you have questions regarding this work, or a private water supply well on or within 100 feet of the right-of-way, please contact:

Name

_____

Company

_____

Phone

_____

❒ **If this box is checked, a call back is needed**

Date: _____ ROW #: _____

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HERE WITH YOU. HERE FOR YOU.

Program Descriptions

Integrated Vegetation Management (IVM)
IVM focuses on the removal of tall-growing trees and shrubs to encourage the establishment of a low-growing shrub population on the right-of-way.

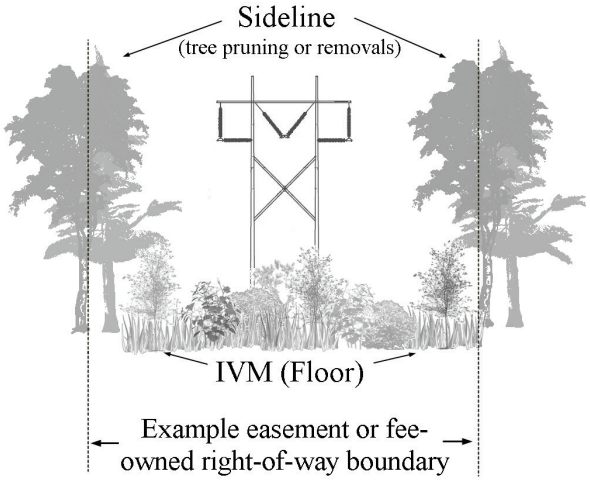
Methods used include:

- Hand cutting with chain saws
- Mowing
- Selective herbicide application (applied to foliage or cut stump surface)

Herbicide use is regulated by federal and state statutes and regulations, which protect sensitive areas, such as:

- Surface Water Supplies
- Wetlands
- Public & Private Wells

Sideline Maintenance
This work consists of removing or pruning danger trees on the easement or fee-owned right-of-way.



Methods used include:

- Skidder bucket or street bucket
- Climbers (for areas inaccessible by equipment)

For more information about our programs and work scheduled for the current year, click on "Operations Documentation" in the following link:

www.nationalgridus.com/transmission/index.asp

CM5453 (2/16)

SORRY WE MISSED YOU

Regarding your recent request for tree service:

Thank you for contacting us. Today, a qualified National Grid representative reviewed the work that you brought to our attention. The results of our review are noted below.

❑ The needed work has been completed.

❑ We do not own the wires involved. They are phone, cable TV and/or

_____

❑ Our field team has reviewed your request for tree work. The situation does not pose a severe threat to our overhead lines at this time. We do perform routine pruning in your area on a periodic basis, every 5-7 years.

❑ We only remove trees that threaten to damage our primary wires. To maintain or remove trees near your service line, you may hire an electrically qualified tree contractor. You may also contact us to request a "temporary disconnection" of your service line if your contractor requires, in order to safely complete the tree work.

❑ Since this tree is within 10 feet of our energized primary facilities, we will do the work required to make the tree removal safe for you or your hired contractor. Please call us 5 days in advance of the tree removal so that we may schedule the job. Please note the cleanup and removal of wood, debris, stumps and any associated lawn damage are your responsibility once our work is complete, even if it involves hiring a contractor.

❑ The tree(s) in question pose(s) a threat to the reliability of our primary facilities. We will prune/remove the tree(s) on your property when a crew is available. It is our policy to remove the brush and leave the wood for the landowner. **We do not remove stumps**.

❑ Other:_____

_____

For questions regarding our tree pruning policies, please review the brochure provided. You may also contact the forestry representative noted at the bottom of the brochure or call our Customer Contact Center at **1-800-642-4272**.

Learn more about our tree work at **ngrid.com/treetrimming**

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CM9476 (7/23)

SORRY WE MISSED YOU

Important update from our tree trimming crew. Please see the box checked below:

❑ NOTIFICATION: We are performing routine tree trimming in your area. We stopped by today but were unable to reach you. The enclosed brochure outlines our tree trimming program. To notify us of additional concerns, please call our forestry representative below or contact our Customer Service Center at **1-800-642-4272**.

❑ NOTIFICATION: Recently we sent a letter notifying you about routine tree trimming in your area, along with a brochure. We stopped in today but were unable to reach you. The work performed involved the removal of trees or tree branches that were interfering or may interfere with electric wires in the future. If you have any questions, please call our forestry representative below.

❑ NOTIFICATION: We have special concerns regarding the tree conditions adjacent to our electric facilities. The work required is beyond our normal specifications. To maintain safe reliable electric service to you and your neighbors the following action needs to be taken. **Please contact the forestry representative noted below within 48 hours. Thank you.**

Learn more about how cyclic tree/vegetation management supports your safe and reliable electric service at **ngrid.com/treetrimming**

_____

_____

_____

_____

_____

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CM9476B (7/23)

Safety is key when working near or around trees and wires

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THE POWER OF ACTION





For additional information about trees and power lines, contact us

1-800-642-4272
www.nationalgridus.com
transmissionforestry@us.ngrid.com

Felling trees is even more dangerous when done near power lines. There is enough electrical energy in a transmission line to kill a person just standing next to a tree that falls onto the line. Energy can flow through the tree and into the ground surrounding the base of the tree and anyone nearby. Then, the simple act of taking a step may be enough to provide the electricity with a path up one leg and back out the other, electrocuting that person. To safely fell a tree, you must eliminate or minimize exposure to the hazards found at the tree and in the surrounding area:

1. Always perform a pre-work hazard assessment of the area. Look carefully for other objects that may be in the potential path of the falling tree—especially people and electric wires. To fell a tree means more than just cutting it down. Felling means cutting in such a way that the tree falls in the desired direction under control.

2. Always assume that power lines are energized and understand that electricity can be passing through a tree without any noticeable sign.

3. Forward lean, back lean and side lean help determine the felling direction. Before attempting to fell a tree, you must know how to cope with these issues with the proper notch and back cuts, use of wedges, ropes or even heavy equipment.

4. Determine the proper amount and direction of hinge wood to safely guide the tree while it falls. Make the back cut just above the notch cut base to allow the hinge to do its job.

5. Remember, broken or hanging branches, attached vines or even an adjacent dead tree are all hazards that will increase the danger of personal injury while tree felling.

6. Still not sure if it is safe—contact the utility company to discuss safe methods of tree felling that will eliminate the possibility of contacting the electrical lines. It could save your life!

CM4781 7/10





Cutting down trees, also known as, “felling trees,” can be dangerous, but even more so when done near power lines. Did you know that the electrical energy in a power line can travel through a tree and electrocute a person standing next to the tree?

When a tree or equipment makes contact with an electric line, the energy can flow through the object and into the ground surrounding the base of that tree or equipment. Anyone nearby or touching the object will become the path of the energy, resulting in serious injury or possibly death by electrocution.

To safely fell a tree, you must eliminate the hazards found at and around the tree. Work clear of all power lines and also wear protective safety equipment. Always assume that a power line is energized.

If you are in doubt about the safety of the work you plan to perform or you have any questions about trees and power lines, contact us at **1-800-642-4272**, **www.nationalgridus.com** or **transmissionforestry@us.ngrid.com**.

CM4831 UNY 10/10

NA-FR-01-95

USDA Forest Service

Northeastern Area State and Private Forestry

HOW to Prune Trees

Peter J. Bedker, Joseph G. O'Brien, and Manfred M. Mielke
Illustrations by Julie Martinez, Afton, MN

Introduction

The objective of pruning is to produce strong, healthy, attractive plants. By understanding how, when and why to prune, and by following a few simple principles, this objective can be achieved.

Why Prune

The main reasons for pruning ornamental and shade trees include safety, health, and aesthetics. In addition, pruning can be used to stimulate fruit production and increase the value of timber. Pruning for *safety* (Fig. 1A) involves removing branches that could fall and cause injury or property damage, trimming branches that interfere with lines of sight on streets or driveways, and removing branches that grow into utility lines. Safety pruning can be largely avoided by carefully choosing species that will not grow beyond the space available to them, and have strength and form characteristics that are suited to the site.

Pruning for *health* (Fig. 1B) involves removing diseased or insect-infested wood, thinning the crown to increase airflow and reduce some pest problems, and removing

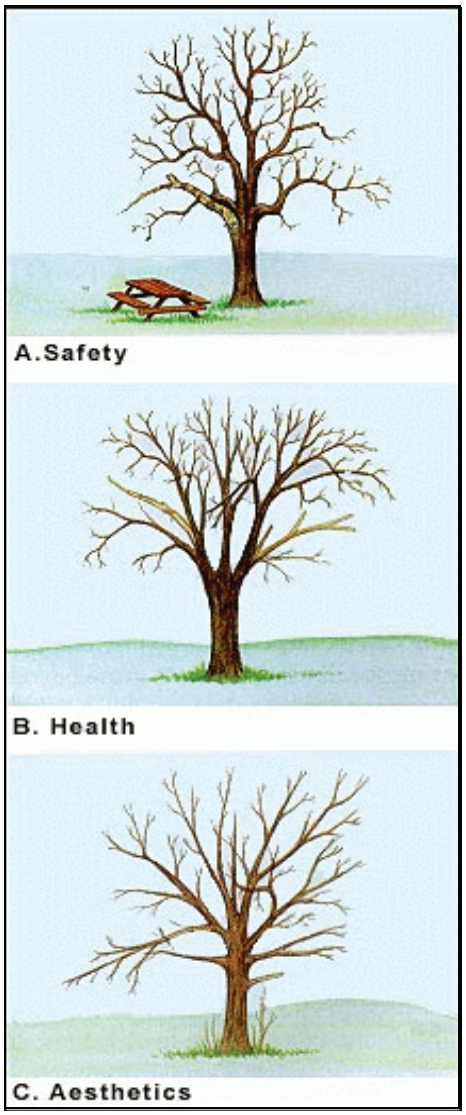


Figure 1. Reasons for pruning.

crossing and rubbing branches. Pruning can best be used to encourage trees to develop a strong structure and reduce the likelihood of damage during severe weather. Removing broken or damaged limbs encourage wound closure.

Pruning for *aesthetics* (Fig. 1C) involves enhancing the natural form and character of trees or stimulating flower production. Pruning for form can be especially important on open-grown trees that do very little self-pruning.

All woody plants shed branches in response to shading and competition. Branches that do not produce enough carbohydrates from photosynthesis to sustain themselves die and are eventually shed; the resulting wounds are sealed by **woundwood** (callus). Branches that are poorly attached may be broken off by wind and accumulation of snow and ice. Branches removed by such natural forces often result in large, ragged wounds that rarely seal. Pruning as a cultural practice can be used to supplement or replace these natural processes and increase the strength and longevity of plants.

Trees have many forms, but the most common types are pyramidal **(excurrent)** or spherical (**decurrent)**. Trees with pyramidal crowns, e.g., most conifers, have a strong central stem and lateral branches that are more or less horizontal and do not compete with the central stem for dominance. Trees with spherical crowns, e.g., most hardwoods, have many lateral branches that may compete for dominance.

To reduce the need for pruning it is best to consider a tree's natural form. It is very difficult to impose an unnatural form on a tree without a commitment to constant maintenance.

Pollarding and **topiary** are extreme examples of pruning to create a desired, unnatural effect. Pollarding is the practice of pruning trees annually to remove all new growth. The following year, a profusion of new branches is produced at the ends of the branches. Topiary involves pruning trees and shrubs into geometric or animal shapes. Both pollarding and topiary are specialized applications that involve pruning to change the natural form of trees. As topiary demonstrates, given enough care and attention plants can be pruned into nearly any form. Yet just as proper pruning can enhance the form or character of plants, improper pruning can destroy it.

Pruning Approaches

Producing strong structure should be the emphasis when pruning young trees. As trees mature, the aim of pruning will shift to maintaining tree structure, form, health and appearance.

Proper pruning cuts are made at a node, the point at which one branch or twig attaches to another. In the spring of the year growth begins at buds, and twigs grow until a new node is formed. The length of a branch between nodes is called an internode.

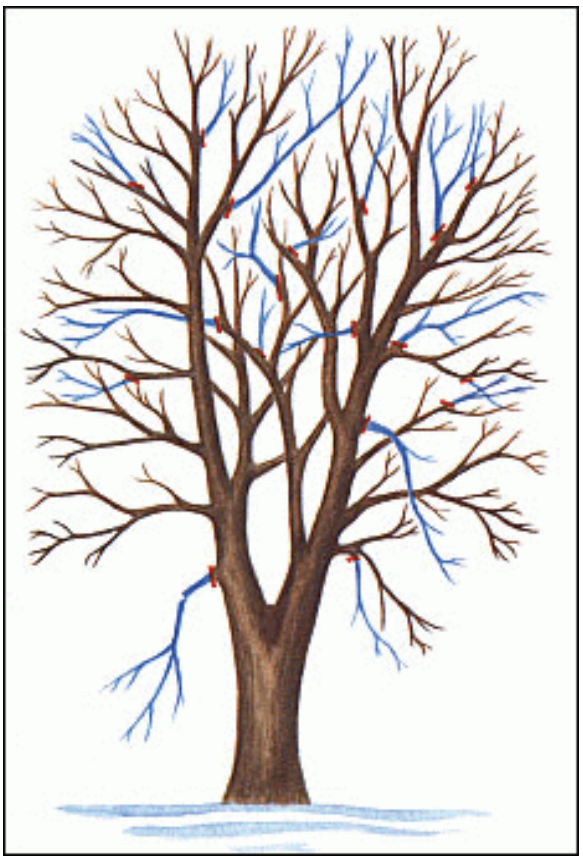


Figure 2. Crown thinning - branches to be removed are shaded in blue; pruning cuts should be made at the red lines. No more than one-fourth of the living branches should be removed at one time.

The most common types of pruning are:

1. *Crown Thinning* (Fig. 2)

Crown thinning, primarily for hardwoods, is the selective removal of branches to increase light penetration and air movement throughout the crown of a tree. The intent is to maintain or develop a tree's structure and form. To avoid unnecessary stress and prevent excessive production of epicormic sprouts, no more than one-quarter of the living crown should be removed at a time. If it is necessary to remove more, it should be done over successive years.



Figure 3. Types of branch unions.

Branches with strong U-shaped angles of attachment should be retained (Fig 3A). Branches with narrow, V-shaped angles of attachment often form **included bark** and should be removed (Fig. 3B). Included bark forms when two branches grow at sharply acute angles to one another, producing a wedge of inward-rolled bark between them. Included bark prevents strong attachment of branches, often causing a crack at the point below where the branches meet. Codominant stems that are approximately the same size and arise from the same position often form included bark. Removing some of the lateral branches from a codominant stem can reduce its growth enough to allow the other stem to become dominant.

Lateral branches should be no more than one-half to three-quarters of the diameter of the stem at the point of attachment. Avoid producing "lion's tails," tufts of branches and foliage at the ends of branches, caused by removing all inner lateral branches and foliage. Lion's tails can result in sunscalding, abundant **epicormic sprouts**, and weak branch structure and breakage. Branches that rub or cross

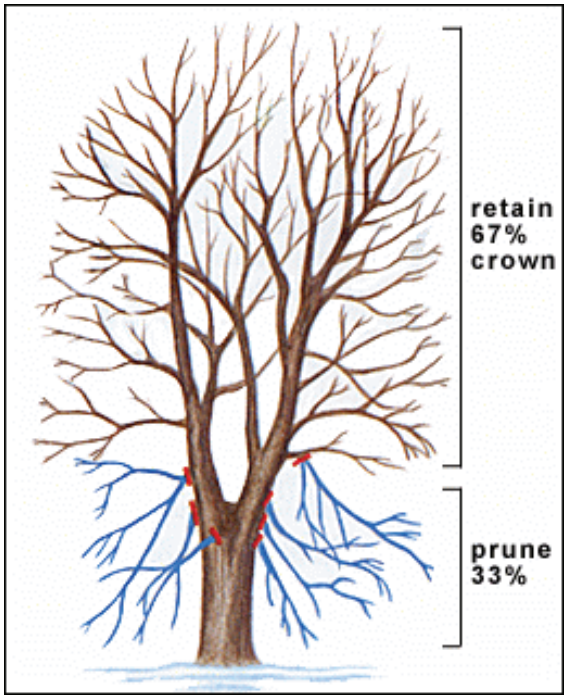


Figure 4. Crown raising - branches to be removed are shaded in blue; pruning cuts should be made where indicated with red lines. The ratio of live crown to total tree height should be at least two-thirds.

another branch should be removed.

Conifers that have branches in whorls and pyramidal crowns rarely need crown thinning except to restore a dominant leader. Occasionally, the leader of a tree may be damaged and multiple branches may become codominant. Select the strongest leader and remove competing branches to prevent the development of codominant stems.

2. *Crown Raising* (Fig. 4)

Crown raising is the practice of removing branches from the bottom of the crown of a tree to provide clearance for pedestrians, vehicles, buildings, lines of site, or to develop a clear stem for timber production. Also, removing lower branches on white pines can prevent blister rust. For street trees the minimum clearance is often specified by municipal ordinance. After pruning, the ratio of the living crown to total tree height should be at least two-thirds (e.g., a 12 m tree should have living branches on at least the upper 8 m).

On young trees "temporary" branches may be retained along the stem to encourage taper and protect trees from vandalism and sun scald. Less vigorous shoots should be selected as temporary branches and should be about 10 to 15 cm apart along the stem. They should be pruned annually to slow their growth and should be removed eventually.

3. *Crown Reduction* (Fig. 5)

Crown reduction pruning is most often used when a tree has grown too large for its permitted space. This method, sometimes called **drop crotch pruning**, is preferred to topping because it results in a more natural appearance, increases the time before pruning is needed again, and minimizes stress (see drop crotch cuts in the next section).

Crown reduction pruning, a method of last resort, often results in large pruning wounds to stems that may lead to decay. This method should never be used on a tree with a pyramidal growth form. A better long term solution is to remove the tree and replace it

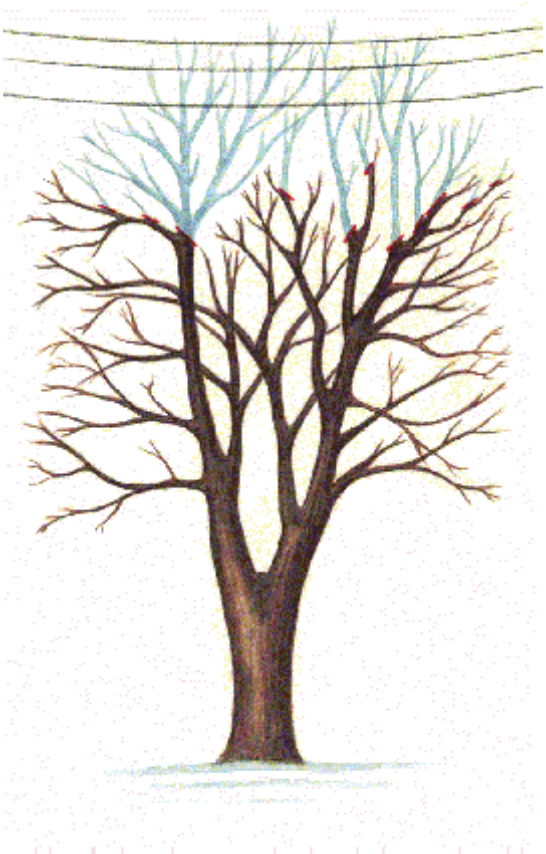


Figure 5. Crown reduction - branches to be removed are shaded in blue; pruning cuts should be made where indicated with red lines. To prevent branch dieback, cuts should be made at lateral branches that are at least one-third the diameter of the stem at their union.

with a tree that will not grow beyond the available space.

Pruning Cuts

Pruning cuts should be made so that only branch tissue is removed and stem tissue is not damaged. At the point where the branch attaches to the stem, branch and stem tissues remain separate, but are contiguous. If only branch tissues are cut when pruning, the stem tissues of the tree will probably not become decayed, and the wound will seal more effectively.

1. *Pruning living branches* (Fig. 6)

To find the proper place to cut a branch, look for the **branch collar** that grows from the stem tissue at the underside of the base of the branch (Fig. 6A). On the upper surface, there is usually a **branch bark ridge** that runs (more or less) parallel to the branch angle, along the stem of the tree. A proper pruning cut does not damage either the branch bark ridge or the branch collar.

A proper cut begins just outside the branch bark ridge and angles down away from the stem of the tree, avoiding injury to the branch collar (Fig. 6B). Make the cut as close as possible to the stem in the **branch axil**, but outside the branch bark ridge, so that stem tissue is not injured and the wound can seal in the shortest time possible. If the cut is too far from the stem, leaving a branch stub, the branch tissue usually dies and woundwood forms from the stem tissue. Wound closure is delayed because the woundwood must seal over the stub that was left.

The quality of pruning cuts can be evaluated by examining pruning wounds after one growing season. A concentric ring of woundwood will form from proper pruning cuts (Fig. 6B). **Flush cuts** made inside the branch bark ridge or branch collar, result in pronounced development of woundwood on the sides of the pruning wounds with very little woundwood forming on the top or bottom (Fig. 7D). As described above, stub cuts result in the death of the remaining branch and woundwood forms around the base from stem tissues.
When pruning small branches with hand pruners, make sure the tools are sharp enough

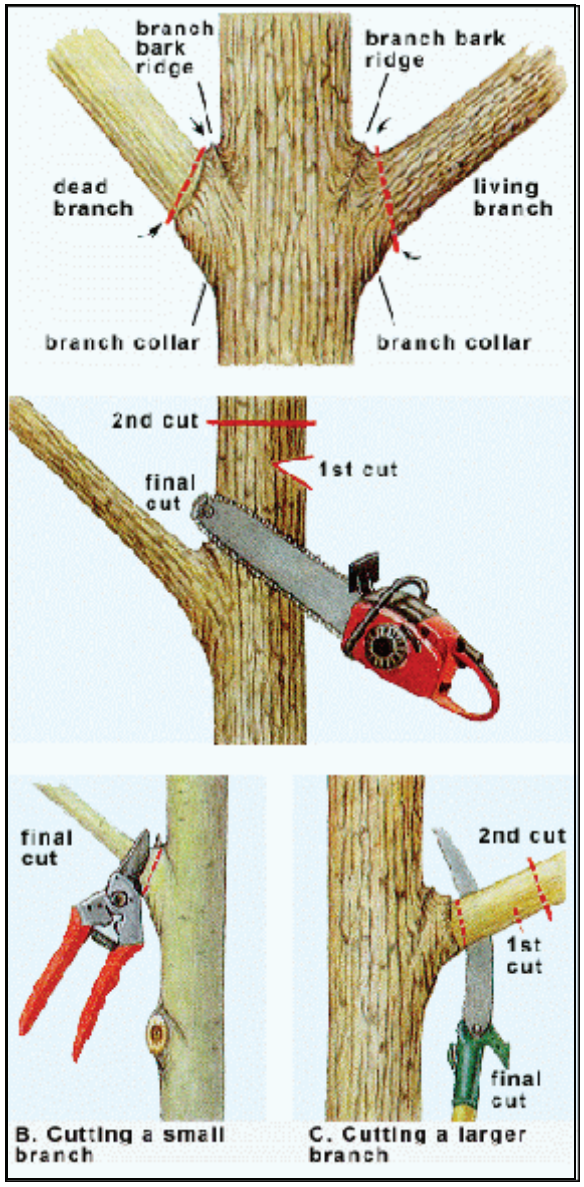


Figure 6. Pruning cuts

to cut the branches cleanly without tearing. Branches large enough to require saws should be supported with one hand while the cuts are made. If the branch is too large to support, make a three-step pruning cut to prevent bark ripping (Fig. 6C).

1. The first cut is a shallow notch made on the underside of the branch, outside the branch collar. This cut will prevent a falling branch from tearing the stem tissue as it pulls away from the tree.
2. The second cut should be outside the first cut, all the way through the branch, leaving a short stub.
3. The stub is then cut just outside the branch bark ridge/branch collar, completing the operation.

2. *Pruning dead branches* (Fig. 6)

Prune dead branches in much the same way as live branches. Making the correct cut is usually easy because the branch collar and the branch bark ridge, can be distinguished from the dead branch, because they continue to grow (Fig. 6A). Make the pruning cut just outside of the ring of woundwood tissue that has formed, being careful not to cause unnecessary injury (Fig. 6C). Large dead branches should be supported with one hand or cut with the three-step method, just as live branches. Cutting large living branches with the three step method is more critical because of the greater likelihood of bark ripping.

3. *Drop Crotch Cuts* (Fig. 6D)

A proper cut begins just above the branch bark ridge and extends through the stem parallel to the branch bark ridge. Usually, the stem being removed is too large to be supported with one hand, so the three cut method should be used.

1. With the first cut, make a notch on the side of the stem away from the branch to be retained, well above the branch crotch.

2. Begin the second cut inside the branch crotch, staying well above the branch bark ridge, and cut through the stem above the notch.
3. Cut the remaining stub just inside the branch bark ridge through the stem parallel to the branch bark ridge.

To prevent the abundant growth of epicormic sprouts on the stem below the cut, or dieback of the stem to a lower lateral branch, make the cut at a lateral branch that is at least one-third of the diameter of the stem at their union.

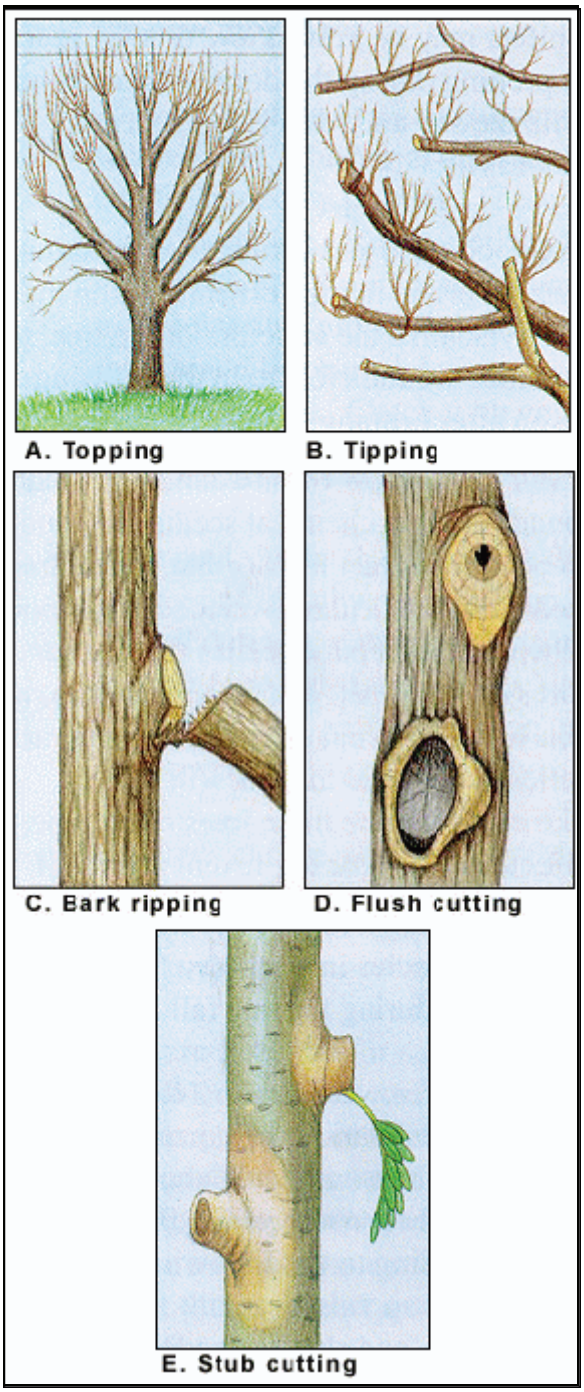
Pruning Practices That Harm Trees

Topping and **tipping** (Fig. 7A, 7B) are pruning practices that harm trees and should not be used. Crown reduction pruning is the preferred method to reduce the size or height of the crown of a tree, but is rarely needed and should be used infrequently.

Topping, the pruning of large upright branches between nodes, is sometimes done to reduce the height of a tree (Fig. 7A). Tipping is a practice of cutting lateral branches between nodes (Fig. 7B) to reduce crown width.

These practices invariably result in the development of epicormic sprouts, or in the death of the cut branch back to the next lateral branch below. These epicormic sprouts are weakly attached to the stem and eventually will be supported by a decaying branch.

Improper pruning cuts cause unnecessary injury and bark ripping (Fig. 7C). Flush cuts injure



stem tissues and can result in decay (Fig. 7D). **Stub cuts** delay wound closure and can provide entry to canker fungi that kill the cambium, delaying or preventing woundwood formation (Fig. 7E).

When to Prune

Conifers may be pruned any time of year, but pruning during the dormant season may minimize sap and resin flow from cut branches.

Hardwood trees and shrubs *without showy flowers*: prune in the dormant season to easily visualize the structure of the tree, to maximize wound closure in the growing season after pruning, to reduce the chance of transmitting disease, and to discourage excessive sap flow from wounds. Recent wounds and the chemical scents they emit can actually attract insects that spread tree disease. In particular, wounded elm wood is known to attract bark beetles that harbor spores of the Dutch elm disease fungus, and open wounds on oaks are known to attract beetles that spread the oak wilt fungus. Take care to prune these trees during the correct time of year to prevent spread of these fatal diseases. Contact your local tree disease specialist to find out when to prune these tree species in your area. Usually, the best time is during the late fall and winter.

Flowering trees and shrubs: these should also be pruned during the dormant season for the same reasons stated above; however, to preserve the current year's flower crop, prune according to the following schedule:

- Trees and shrubs that flower in early spring (redbud, dogwood, etc.) should be pruned immediately after flowering (flower buds arise the year before they flush, and will form on the new growth).
- Many flowering trees are susceptible to fireblight, a bacterial disease that can be spread by pruning. These trees, including many varieties of crabapple, hawthorn, pear, mountain ash, flowering quince and pyracantha, should be pruned during the dormant season. Check with your county extension agent or a horticulturist for additional information.
- Trees and shrubs that flower in the summer or fall always should be pruned during the dormant season (flower buds will form on new twigs during the next growing season, and the flowers will flush normally).

Dead branches: can be removed any time of the year.

Pruning Tools

Proper tools are essential for satisfactory pruning (Fig.6). The choice of which tool to use depends largely on the size of branches to be pruned and the amount of pruning to be done. If possible, test a tool before you buy it to ensure it suits your specific needs. As with most things, higher quality often equates to higher cost.

Generally speaking, the smaller a branch is when pruned, the sooner the wound created will seal. Hand pruners are used to prune small branches (under 2.5 cm diameter) and many different kinds are available. Hand pruners can be grouped into by-pass or anvil styles based on the blade configuration. Anvil style pruners have a straight blade that cuts the branch against a small anvil or block as the handles are squeezed. By-pass pruners use a curved cutting blade that slides past a broader lower blade, much like a scissors. To prevent unnecessary tearing or crushing of tissues, it is best to use a

by-pass style pruner. Left- or right-handed types can be purchased.

Slightly larger branches that cannot be cut with a hand pruner may be cut with small pruning saws (up to 10 cm) or lopping shears (up to 7 cm diameter) with larger cutting surfaces and greater leverage. Lopping shears are also available in by-pass and anvil styles.

For branches too large to be cut with a hand pruner or lopping shears, pruning saws must be used. Pruning saws differ greatly in handle styles, the length and shape of the blade, and the layout and type of teeth. Most have tempered metal blades that retain their sharpness for many pruning cuts. Unlike most other saws, pruning saws are often designed to cut on the "pull-stroke."

Chain saws are preferred when pruning branches larger than about 10 cm. Chainsaws should be used only by qualified individuals. To avoid the need to cut branches greater than 10 cm diameter, prune when branches are small.

Pole pruners must be used to cut branches beyond reach. Generally, pruning heads can cut branches up to 4.4 cm diameter and are available in the by-pass and anvil styles. Once again, the by-pass type is preferred. For cutting larger branches, saw blades can be fastened directly to the pruning head, or a separate saw head can be purchased. Because of the danger of electrocution, pole pruners should not be used near utility lines except by qualified utility line clearance personnel.

To ensure that satisfactory cuts are made and to reduce fatigue, keep your pruning tools sharp and in good working condition. Hand pruners, lopping shears, and pole pruners should be periodically sharpened with a sharpening stone. Replacement blades are available for many styles. Pruning saws should be professionally sharpened or periodically replaced. To reduce cost, many styles have replaceable blades.

Tools should be clean and sanitized as well as sharp. Although sanitizing tools may be inconvenient and seldom practiced, doing so may prevent the spread of disease from infected to healthy trees on contaminated tools. Tools become contaminated when they come into contact with fungi, bacteria, viruses and other microorganisms that cause disease in trees. Most pathogens need some way of entering the tree to cause disease, and fresh wounds are perfect places for infections to begin. Microorganisms on tool surfaces are easily introduced into susceptible trees when subsequent cuts are made. The need for sanitizing tools can be greatly reduced by pruning during the dormant season.

If sanitizing is necessary it should be practiced as follows: Before each branch is cut, sanitize pruning tools with either 70% denatured alcohol, or with liquid household bleach diluted 1 to 9 with water (1 part bleach, 9 parts water). Tools should be immersed in the solution, preferably for 1-2 minutes, and wood particles should be wiped from all cutting surfaces. Bleach is corrosive to metal surfaces, so tools should be thoroughly cleaned with soap and water after each use.

Treating wounds

Tree sap, gums, and resins are the natural means by which trees combat invasion by pathogens. Although unsightly, sap flow from pruning wounds is not generally harmful; however, excessive "bleeding" can weaken trees.

When oaks or elms are wounded during a critical time of year (usually spring for oaks, or throughout the growing season for elms) -- either from storms, other unforeseen mechanical wounds, or from necessary branch removals -- some type of wound dressing should be applied to the wound. Do this immediately after the wound is created. In most other instances, wound dressings are unnecessary, and may even be detrimental. Wound dressings will not stop decay or cure infectious diseases. They may actually interfere with the protective benefits of tree gums and resins, and prevent wound surfaces from closing as quickly as they might under natural conditions. The only benefit of wound dressings is to prevent introduction of pathogens in the specific cases of Dutch elm disease and oak wilt.

Pruning Guidelines

To encourage the development of a strong, healthy tree, consider the following guidelines when pruning.

General

- Prune first for safety, next for health, and finally for aesthetics.
- Never prune trees that are touching or near utility lines; instead consult your local utility company.
- Avoid pruning trees when you might increase susceptibility to important pests (e.g. in areas where oak wilt exists, avoid pruning oaks in the spring and early summer; prune trees susceptible to fireblight only during the dormant season).
- Use the following decision guide for size of branches to be removed: 1) under 5 cm diameter - go ahead, 2) between 5 and 10 cm diameter - think twice, and 3) greater than 10 cm diameter - have a good reason.

Crown Thinning

- Assess how a tree will be pruned from the top down.
- Favor branches with strong, U-shaped angles of attachment. Remove branches with weak, V-shaped angles of attachment and/or included bark.
- Ideally, lateral branches should be evenly spaced on the main stem of young trees.
- Remove any branches that rub or cross another branch.
- Make sure that lateral branches are no more than one-half to three-quarters of the diameter of the stem to discourage the development of co-dominant stems.

- Do not remove more than one-quarter of the living crown of a tree at one time. If it is necessary to remove more, do it over successive years.

Crown Raising

- Always maintain live branches on at least two-thirds of a tree's total height. Removing too many lower branches will hinder the development of a strong stem.
- Remove basal sprouts and vigorous epicormic sprouts.

Crown Reduction

- Use crown reduction pruning only when absolutely necessary. Make the pruning cut at a lateral branch that is at least one-third the diameter of the stem to be removed.
- If it is necessary to remove more than half of the foliage from a branch, remove the entire branch.

Glossary

Branch Axil: the angle formed where a branch joins another branch or stem of a woody plant.

Branch Bark Ridge: a ridge of bark that forms in a branch crotch and partially around the stem resulting from the growth of the stem and branch tissues against one another.

Branch Collar: a "shoulder" or bulge formed at the base of a branch by the annual production of overlapping layers of branch and stem tissues.

Crown Raising: a method of pruning to provide clearance for pedestrians, vehicles, buildings, lines of sight, and vistas by removing lower branches.

Crown Reduction Pruning: a method of pruning used to reduce the height of a tree. Branches are cut back to laterals that are at least one-third the diameter of the limb being removed.

Crown Thinning: a method of pruning to increase light penetration and air movement through the crown of a tree by selective removal of branches.

Callus: see woundwood.

Decurrent: a major tree form resulting from weak apical control. Trees with this form have several to many lateral branches that compete with the central stem for dominance resulting in a spherical or globose crown. Most hardwood trees have decurrent forms.

Epicormic Sprout: a shoot that arises from latent or adventitious buds; also know as water sprouts that occur for on stems and branches and suckers that are produced from the base of trees. In older wood, epicormic shoots often result from severe defoliation or radical pruning.

Excurrent: a major tree form resulting from strong apical control. Trees with this form have a strong central stem and pyramidal shape. Lateral branches rarely compete for dominance. Most conifers and a few hardwoods, such as sweetgum and tuliptree, have excurrent forms.

Flush Cuts: pruning cuts that originate inside the branch bark ridge or the branch collar, causing unnecessary injury to stem tissues.

Included Bark: bark enclosed between

branches with narrow angles of attachment, forming a wedge between the branches.

Pollarding: the annual removal of all of the previous year's growth, resulting in a flush of slender shoots and branches each spring.
Stub Cuts: pruning cuts made too far outside the branch bark ridge or branch collar, that leave branch tissue attached to the stem.

Tipping: a poor maintenance practice used to control the size of tree crowns; involves the cutting of branches at right angles leaving long stubs.

Topping: a poor maintenance practice often used to control the size of trees; involves the indiscriminate cutting of branches and stems at right angles leaving long stubs. Synonyms include rounding-over, heading-back, dehorning, capping and hat-racking. Topping is often improperly referred to as pollarding.

Topiary: the pruning and training of a plant into a desired geometric or animal shape.

Woundwood: lignified, differentiated tissues produced on woody plants as a response to wounding (also known as callus tissue).

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"How to Prune Trees" was written to help people properly prune the trees they care about. If you doubt your ability to safely prune large trees, please hire a professional arborist. Information in this publication can be used to interview and hire a competent arborist.



Important Information for Homeowners Along Transmission Rights-of-Way

Our Vegetation Management Department will soon carry out routine maintenance on the electricity transmission right-of-way on or adjacent to your property.

A variety of Integrated Vegetation Mangement (IVM) methods will be used, including hand cutting, mowing and selective herbicide application, and will be implemented by our licensed and experienced contractors.

IVM is essential to provide safe and reliable delivery of electricity. It prevents tall-growing vegetation from growing into the overhead lines.

In addition, we manage vegetation to allow access to the lines for routine maintenance and for restoration of electric service following major storms.

By implementing IVM methods, we create stable, low-growing plant communities that require minimal maintenance and disruption of the environment. These plant communities provide a healthy wildlife habitat, especially for those animals requiring open fields, meadows and shrubs.

Use of herbicides within our IVM approach is regulated by federal and state statutes and regulations.

These requirements protect sensitive areas such as:

- surface water supplies
- wetlands
- public and private wells
- visually sensitive sites near roads and residences

continued on back

nationalgrid

The work takes place in up to four phases:

- Crews hand cut tall hardwood and conifer trees within the right-of-way, and identify appropriate buffers surrounding public water supplies, private wells, streams, ponds, lakes and residences.
- Crews treat the stumps of cut hardwood trees with herbicide to prevent re-sprouting.
- Selective foliar (leaf) application of herbicides, primarily to hardwood trees, takes place while leaves are on the trees.
- Work at roads and yards is carried out throughout the year.

If you have any questions/concerns, or a private water supply well within 100 feet of the right-of-way, please contact the contractor representative below.

The contractor doing the work in your area is:

_____

The contractor's representative is:

_____

and may be contacted at:

_____

The electric company identification for the right-of-way is:

_____

We at National Grid believe our IVM approach to right-of-way vegetation management is the most environmentally friendly and customer-friendly way to accomplish this necessary task. We would be happy to answer any questions you may have as the work is carried out.

This is an important notice. Please have it translated.

Este é um aviso importante. Queira mandá-lo traduzir.
Este es un aviso importante. Sírvase mandarlo traducir.
Avis important. Veuillez traduire immediatement.

ĐÂY LÀ MỘT BẢN THÔNG CÁO QUAN TRỌNG
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Questa è un' informazione importante, si prega di tradurla.

Это очень важное сообщение. Пожалуйста, попросите чтобы вам его перевели.

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Notification of Routine Tree Maintenance

Address

Start:
Duration:
Circuit:
Crew:
Account:

For Service Address:

Dear Customer:

As a recognized National Arbor Day Foundation Tree Line USA Utility award winner since 2000, National Grid strives to provide safe, reliable energy to our more the 1.5 million customers throughout our New York service territory. In order to maintain safe and reliable energy services to our customers, we will be in your area on or about the **START** date noted above and will continue for the **DURATION** noted with our cycle tree/vegetation management program.

Our programs provide that diseased and/or weakened trees, together with those that have been planted or allowed to grow in hazardous locations and that have the potential to contribute to power outages, will be pruned; or in some cases, may include their removal if they pose a severe threat to our facilities to provide you with continual reliable service. We share your concerns and appreciation for trees, as well respecting the environment in which we serve.

The work will be performed by our qualified contractors noted as **CREWS** and the will make every attempt to notify you in person at the time work is completed. There is not change for this work, and you do not have to be home when the work is being performed.

To help keep you informed, we have enclosed an insert explaining our tree/vegetation management programs in detail and helpful tips on how to avoid planting trees near electric lines.

If your electric service is provided by underground connections rather than overhead, this notice is as a courtesy so you'll be aware of the intentions and actions of tree services personnel and equipment you'll see in your neighborhood in the near future.

We thank you for your understanding and cooperation during this process. If you have questions or concerns, please visit our website at www.nationgridus.com and scroll to the **Important Information About Trees And Your Electric Service** section at the bottom of the page about the work that is scheduled or you may contact our Customer Service Contact Center at 1-800-642-4272

Sincerely,

National Grid

Distribution Forestry