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UTAH JUNIPER
Juniperus osteosperma

Selecting and Planting Trees

Trees beautify and improve our environment. The trees featured in this policy were chosen to simplify the process of selecting trees to plant near power lines and enhance the landscape. There are also tips on planting trees for energy efficiency, and reminders for staying safe around electricity. For additional help with planting decisions, pruning questions, and safety concerns, please contact Garret Elmer at 801-804-4629 or gelmer@spanishfork.org

Planting the Right Tree in the Right Place

PAPERBACK MAPLE
Acer Griseum

With care and good stewardship, trees provide both aesthetic and economic benefits. Trees are incredibly diverse and beautiful. All sizes, all color, and as a drive through any neighborhood reveals, trees are familiar and often dominant elements in landscaping plans.

Trees are engines that convert carbon dioxide into oxygen, thereby helping contribute to efforts to offset the production of carbon dioxide from coal-fired power plants, automobiles, and other industrial processes. They control erosion and can dampen wind or sound. Trees can play a significant role in controlling energy use if used as part of an energy conservation strategy.

Trees are of extreme interest to electric utilities for a number or reasons. For all the good they do, it's not all greenery and scenery. Trees whipped by winds or weighed down by snow will often cause power interruptions that disrupt business or home life, as well as compromise critical services such as hospitals and police. They are a common cause of electric service interruptions. Furthermore, improper or careless pruning or falling of trees is a leading cause of serious and fatal accidents involving contact with power lines.

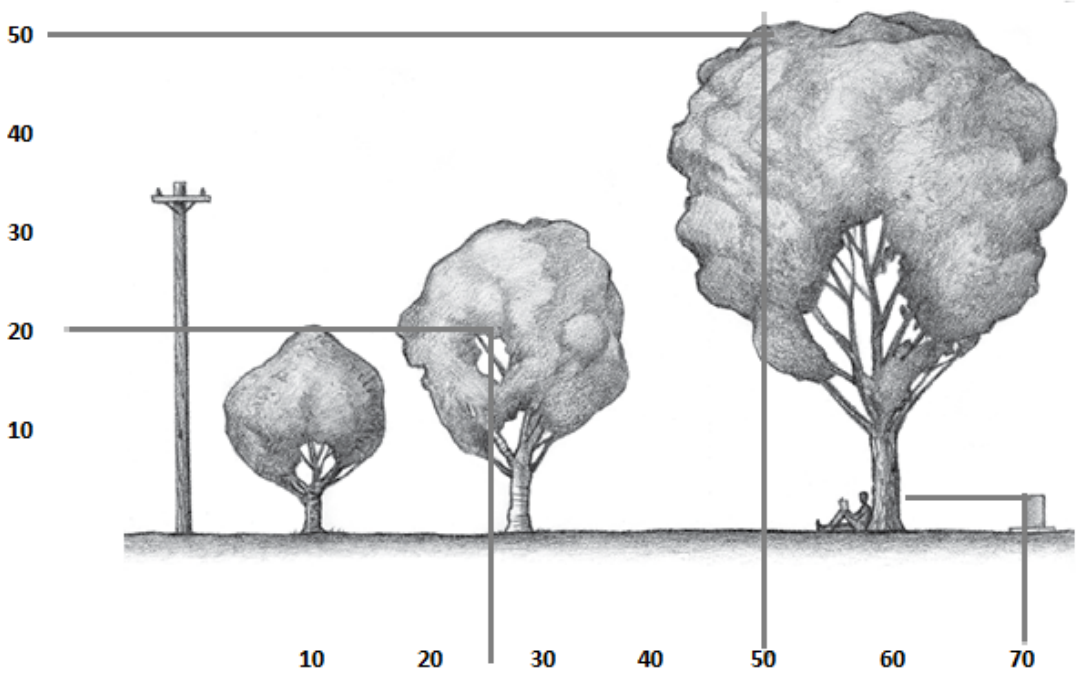
But the good far outweighs the bad. That's why we've put together important information on how to make sure trees and power lines can peacefully coexist without compromising safety or reliability.

First, there are different types of high-voltage lines, and utilities have to manage each differently based on their importance.

Planting near Distribution Lines

Distribution lines are those commonly running through neighborhoods. An outage to a distribution line could affect hundreds or even thousands of electric customers. That's why utilities and cities across the country are asking homeowners to plant adjacent to these power lines only those species of trees that will grow to 25 feet or less at maturity. Medium-statured trees (those 25 to 35 feet tall at maturity) should be planted no closer than 25 feet away from an overhead power line, and tall growing trees (those that will be taller than 35 feet at maturity) ought not to be planted any closer than 50 feet

from a distribution line. The zones apply to an equal distance on both sides of the power pole. See the figure below.

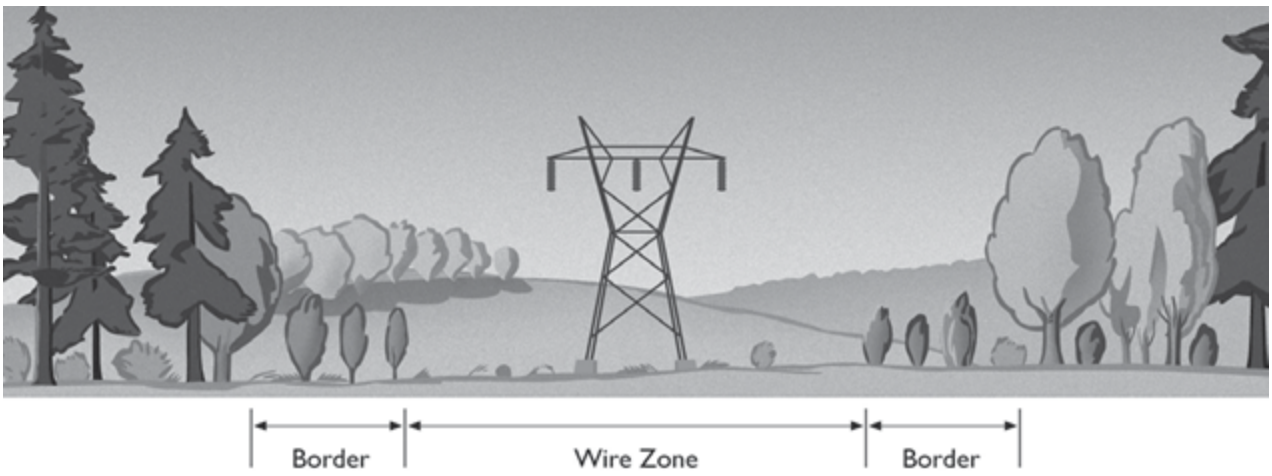


LOW GROWING TREES	MEDIUM HEIGHT TREES	LARGE HEIGHT TREES
Low growing trees (under 25 feet) may be planted adjacent to power lines	Medium trees (over 35 feet high when mature) need to be planted at least 25 feet away from overhead power lines	Large trees (over 50 feet high when mature) need to be planted at least 50 feet away from overhead power lines

Trees and shrubs should be planted at least 10 feet away from overhead power lines and ground mounted electrical equipment.

Planting Near Transmission Lines

Transmission lines are high-voltage lines that carry far more energy than distribution lines, between 46,000 and 500,000 volts on our system. These lines are on the tallest, often multi-poled wooden or steel structures. They are the arteries of the electric grid, and outage on these lines could affect many thousands of customers. There have been extreme cases where trees contacting transmission lines have initiated blackouts that have left millions of people without electricity. Given the potentially dire consequences a conflict between trees and transmission lines could have on public safety and service reliability, trees typically must be removed from directly below transmission lines, at least where the lines are less than 50 feet off the ground. This area is called the "wire zone." Low-growing trees are allowed in a border zone that extend from ten feet to the sides of the wires (not the centerline of the right of way) out to the right of way edge. Medium type trees may be planted no closer than 30 feet to the side of wires, and tall-statured trees should be planted no closer than 50 feet from the closest wires. The figure below shows the areas around the power lines and towers that should be kept clear. Where the lines are 50 to 100 feet off the ground, low-growing trees may be planted throughout the right of way. Medium- and tall-growing trees may grow where the line is 100 feet in height or more. Any imminently hazardous trees in any zone will be removed for your safety and the integrity of the power system.



These standards contain descriptions of 100 smaller-growing tree species that can be planted adjacent to distribution lines or in the border zone of transmission lines. It is a guide for people who live in Spanish Fork City's service area. While not all trees will

survive in any given location. There will be any number that could work for a particular location in our service area. This list is not exhaustive. However, it does give an idea of the depth of choices available. Local arborists and nurseries can provide other options, but if you plant your new tree around power lines. It is important that whatever tree is chosen for use in proximity to power lines it does not grow to more than 25 feet at maturity.

FLAMELEAF SUMAC
Rhus copallina

Pruning Trees in Proximity to Distribution Lines

Pruning is an important part of providing as safe and reliable electrical service as possible. We take pride in having a tree maintenance program. We hire professional arborists to maintain a safe corridor around the power lines. In addition to this our crews are looking for areas that are potential problems and work to resolve the issue before it becomes a problem.
If trees require repeated pruning or continually conflict with power lines, often the best solution is tree removal. That's certainly true around transmission lines. Many times, it is also the case near distribution lines where pruning alone cannot achieve safe clearance or where repeated pruning is too expensive for our ratepayers.
Pruning clearances depend on tree species and growth patterns, and the voltage of nearby power lines. However, we typically provide at least 10 feet of clearance between trees and distribution lines (see illustration below for some shapes you may expect from properly pruned trees).

While many people object to these forms, they are in the best long-term interest of tree health, public safety and service reliability. For more information on the right tree in the right place and proper pruning for trees in proximity to high-voltage lines, visit the national arbor day website www.arborday.org or treesaregood.org.

Common Shapes of Properly Pruned Trees

100 Tree Species to Use Adjacent to Power Lines

Spanish Fork City Approved Street Tree List					
Category1: Recommended Trees for Park Strips 6ft -10ft wide					
Common Name, recommended varieties	**Scientific Name**	**Height, Width**	**Information**	**Use under/around power lines? Height 25'or less**	
Amur Maple, such as 'Red November', 'Embers'	Acer ginnala	20-25', 20-30'	Hardy tree, broad oval shape, tolerate most soil types	yes	
Bigtooth Maple	Acer grandidentatum	20-30', 20-25'	Drought tolerant	yes	
Hedge Maple, such as 'Queen Elizabeth', 'Streetside Maple'	Acer campestre	25-45', 25-45'	Slow growing, tolerates poor soils 'Metro Gold' is a narrow variety	certain varieties	
Paperbark Maple, such as 'Fireburst', 'Cinnamon Girl'	Acer griseum	20-25', 20-25'	Exfoliating bark, very few pests or diseases	yes	
Tatarian Maple such as 'Hotwings', Rugged Charm'	Acer tataricum	20-25', 20-25'	Red showy samaras, Bright red fall color. Susceptible to some disease and pests	yes	
Trident Maple, such as 'Streetwise'	Acer buergerianum	20-30', 15-25	Drought tolerant, pest free	certain varieties	
Sycamore Maple	Acer pseudoplatanus	40-60', 25-35'	Fast growing, deep roots, susceptible to anthracnose disease	no	

European Hornbeam such as ‘Emerald Avenue’,	Carpinus betulus	30-40’, 20-40’	Low maintenance. Disease and pest resistant. Strong branches. Non aggressive roots. Narrow Varieties: ‘Palisade’, ‘Rising fire’, ‘Firespire’, ‘Fastigiata’	no	
Common Name	Scientific Name	Height, Width	Information	Use under/around power lines?	
Netleaf Hackberry	Celtis reticulata	20-30’, 20-25’	Produces little berries birds eat, can handle periods of drought	Yes- certain varieties	
Hackberry	Celtis occidentalis	40-45’ 30-35’	Deep roots so less likely to damage the sidewalk. ‘Prairie Sentinel’ is narrow variety	no	
Eastern Redbud several varieties	Cercis canadensis	20-30’, 25-35’	Heart shaped leaves, Purple pink flowers. Yellow fall color	certain varieties	
Fringe Tree	Chionanthus virginicus	20-25’, 20-25’	Fragrant spring flowers	yes	
English Hawthorn such as ‘Crimson Cloud’	Crataegus laevigata	20-30’, 15-25’	Abundant pink flowers. Relatively thornless, can be susceptible to fire blight. Non aggressive roots	Yes certain varieties	
Thornless Cockspur Hawthorn	Crataegus crusgalli ‘inermis’	20-25’, 20-25’	Thornless. White flower in spring, berry like fruit fall/winter	yes	
Washington Hawthorn	Crataegus phaenopyrum	25-30’, 20-25’	Reddish purple foliage changing to dark green, white flowers late spring, tolerates urban stress, has thorns	Certain varieties	
Ginkgo such as ‘Autumn Gold’, ‘Magyar’, ‘Princeton Sentry’	Ginkgo biloba ‘Autumn Gold’ ‘Princeton Sentry’	40-60’, 20-30’	Excellent yellow fall color. Make sure to get male tree-females trees produce fruit that have foul odor	no	

Ginkgo such as ‘Fairmount’, ‘Mayfield’, Fastigiata’, ‘Liberty Splendor’	Ginkgo biloba	25-35’, 10-12’	These are narrow varieties, excellent yellow fall color. Make sure to get male trees (females produce fruit with foul smell)	no	
Thornless Honey Locust such as ‘Streetkeeper’, ‘Shademaster’, ‘Skyline’, ‘Sunburst, ‘Perfection’	Gledtsia tricanthos inermis	35-50’, 20-40’	Compound small fine textured leaves. Open and airy branching. Fast growing. These varieties are seedless and thornless varieties	no	
Common Name	Scientific Name	Height, Width	Information	Use under/Under power lines?	
Kentucky Coffee Tree ‘Expresso’	Gymnocladus dioicus	40-50’, 30-35’	Drought tolerant, yellow fall color. Deeply furrowed bark, 3-4” seed pods‘ Espresso’ variety is a seedless variety	no	
European Beech such as ‘Spaethii’, ‘Tricolor’. A narrow variety is ‘Dawyck’, ;Fastigiate’	Fagus sylvatica	30-50’, 25-40’’	Purple green foliage. Can tolerate alkaline soil. ‘Penula’ variety should be avoided in park strips.	no	
Ornamental Flowering Crabapple, several varieties. Seedless variety preferred in parkstrip	Malus species	20-25’, 15-20’	Spring blossoms range from white-pink-purple/ magenta.Produces small fruit. *‘Spring Snow’ is a fruitless variety	yes	
Persian Ironwood	Parrotia persica	20-40’, 25-30’	Exfoliating bark. ‘Persian Spire’ is narrow variety	no	

Amur Corktree ‘Macho’	Phellodendron amurense	30-40’, 25-30’	Thrives in urban conditions, tolerates dry soils, ‘Macho’ is seedless variety	no	
Chokecherry ‘Canadian Red’,	Prunus virginiana	20-25’, 20-25’	Green leaves turn a reddish purple in summer, can produce small fruit, fast growing	yes	
Ornamental Flowering Cherry 'Kwanzan’	Prunus serrulate	20-30’, 15-25’	Pink spring blossoms, produces very few fruit	Certain varieties	
Ornamental Flowering Cherry ‘Sargent’	Prunus sargentii	30-35’, 25-35’	Pink spring blossoms, great red fall color, resistant to most cherry tree pests	no	
Common Name	Scientific Name	Height, Width	Information	Use under power lines?	
Ornamental Flowering Cherry ‘Yoshino’	Prunus x yedoensis	25-35’, 25-35’	White, fragrant spring blossoms, tolerant of many soils	no	
English Oak	Quercus robur	40-60’ 30-40’	‘Fastigiata’, ‘Skyrocket’, ’Streetspire’, 'Kindred spirit’ narrow variety, 'Atropurpurea' has purple leaves	no	
Bur Oak, variety such as: ‘Urban Pinnacle’	Quercus macrocarpa	50-60’ 25-45’	Does well in alkaline soil, large impressive tree, strong branches	no	
Japanese Pagoda tree	Sophora japonica	30-45’, 25-45’	Yellow white flowers in August. Fruit/seed pods look like a string of beads.	no	
Japanese Tree Lilac such as ‘Ivory Silk’, ‘Ivory Pillar’, ‘China Snow’, ‘ Great Wall’, ‘Snowdance’	Syringa reticulata	25-35’, 15-25’	Flowers bloom in summer, relatively pest free. Prune after flowering to minimize seed production	no	

Little leaf Linden ‘Greenspire’, ‘Shamrock’	Tilia cordata	40-50’, 30-45’	Small heart shaped leaves, tolerates many situations Common To have included bark=weak branch system	no
Silver Linden ‘Sterling’	Tilia tomentosa	40-60’, 30-40’	Underside of leaves white grayish color. Common to have included bark=weak branch system	no
Elm such as ‘Frontier’, ‘Emerald Fair’,	Ulmus species	30-50’, 20-40’		no
Lacebark Elm	Ulmus parvifolia	40-50’, 25-30’	Small leaves, exfoliating bark. Tolerate road salt. Narrow Varieties: ‘Everclear Elm’, Emerald Prairie’	no
Zelkova such as ‘City Sprite’, ‘Wireless’	Zelkova serrata	20-25’,	Tolerates road salts, slow growing. ‘City Sprite is round canopy shape. ‘Wireless’ is wide, flat top canopy	yes
Zelkova such as 'Green Vase’, ‘Village Green’	Zelkova serrata	40-60’, 30-50’	Small leaves ‘Musashino’ variety is a columnar variety	no
Category 2: Recommended Trees for Park Strips 10 feet wide and larger				
Common Name	Scientific Name	Height, Width	Information	Use under power lines?
Norway Maples, ‘Crimson King’, Cleveland’ etc	Acer platanoides	40-50’, 30-40’	Extensive shallow root system- to avoid lifting sidewalks etc. provide lots of room for roots.	no
Statestreet Maple, such as ‘Rugged Ridge’,	Acer miyabei	30-50’, 30-40’	Heat and drought tolerant, tolerants many soils,	no

			resists sun scald, pest free strong tree		
Common Horsechestnut	Aesculus hippocastanum	50-75-, 40-70’	Large palmate leaves, nuts and husks drop in fall	no	
Catalpa	Catalpa speciosa	40-60’, 20-40’	Heart shaped leaves, flowers in June, Long seed pods.	no	
Common Hackberry	Celtis occidentalis	40-90’, 40-50’	Deep rooted, drought tolerant, hardy tree	no	
Thornless Honey Locust such as ‘Streetkeeper’, ‘Shademaster’, ‘Skyline’, ‘Sunburst, ‘Perfection’	Gledtsia tricanthos inermis	35-50’, 20-40’	Compound small fine textured leaves. Open and airy branching. Fast growing. These varieties are seedless and thornless varieties	no	
Tulip tree	Liriodendron tulipifera	60-80’, 30-45’	Leaf shape resembles a tulip	no	
London Planetree ‘Bloodgood’	Platanus acerifolia	70+’, 50+’	Large ball-like seed heads, bark flakes off revealing a blotchy pattern. ‘Bloodgood’ less susceptible to anthracnose	no	
Bur Oak	Quercus macrocarpa	50-70’, 50-70’’		no	
Chinkapin Oak	Quercus muehlenbergii	45-60’ 40-50’	Durable and adaptable	no	
Trees to avoid in park strips, trees to use with caution in any landscape:					
-- Certain Maples are susceptible to iron chlorosis because of our alkaline soil:					
- Acer rubrum (Red Maple varieties) such as : “October Glory”, “ Red Sunset”, “ Autumn Flame”, “Brandywine”,					
- Acer x freemanii “Autumn Blaze maple”, Dry leaves can be toxic to horses.					

- Silver Maple varieties (Acer saccharinum) susceptible to chlorosis because of our alkaline soil type.	
- Sugar maple varieties: Roots do not like to go in confined spaces- roots need lots of room and they do not handle salt very well.	
-- Swamp White Oak- Can develop chlorosis in alkaline soil	
-- Pin oak- Susceptible to iron chlorosis because of our alkaline soil	
-- Sweetgum-liquidambar styraciflua—Altingiaceae—Chlorosis because of our soil pH, roots need lots of room, does not tolerate pollution	
-- Tree of heaven (Ailanthus altissima) messy tree, seeds/seedlings become nuisance/invasive	
-- Russian Olive- invasive	
-- Flowering pear: Highly prone to fire blight, often poor branch structure, inside branches tend to die, canopy will need crown cleaning.	
-- Siberian Elm: Disease, pests, and problems. This species has brittle branches and is prone to breaking apart in storms. Highly susceptible to elm leaf beetles. Aggressive spreader through seedlings due to a high rate of seed germination.	

How to Plant a Tree

1. **Dig the Planting Hole**

   Before you start, call 811 to locate all underground utilities. Dig a planting hole at least twice the diameter of, and not deeper than, the root ball. The loose soil will encourage new root growth in order to establish the tree. The root ball needs to rest on firm ground so it will not settle.

2. **Plant the Tree**

   Lift the tree by the root ball (never by the trunk), remove its container, and place the tree into the planting hole. Make sure the top of the root ball is slightly above ground level. If the tree is balled and burlapped, remove any twine or wire, and remove or fold down the burlap. Make sure the tree is standing straight and backfill with the original soil. Mixing the soil with fertilizer or mulch is not recommended. As you fill the hole, gently firm the soil around the tree to hold it in place. Water the tree thoroughly to settle the soil and eliminate any air pockets.

3. **Prune the Tree Only if Necessary**

   Examine the tree for injury to branches. Prune broken branches back to other branches or to the trunk. While pruning, do not damage the branch collar (the swollen area where one branch meets another).

4. **Stake the Tree Only if Necessary**

   Staking is usually unnecessary for balled and burlapped and container-grown trees. If needed, stake the tree to keep it upright until established. Drive two stakes spaced an equal distance apart outside the planting area. Attach a broad soft strapping material loosely to the trunk and attach by wire or twine to the stakes. The stakes should not be left in place for more than 1 year.

5. **Mulch and Water**

   Place a layer of mulch around the tree about 2- to 4-inches deep. Keep the mulch away from the trunk. The tree should be watered at least once a week and more often in hot weather. Watering should taper off in a fall so the tree with stop growing and harden for winter.

Planting Trees for Energy Efficiency

Trees can play a significant role in controlling energy use. Planting trees in certain places around your home can help keep you comfortable and keep your energy costs down. Here are some ways to plant trees and save:

- Plant deciduous trees facing southeast and southwest for summer shade and winter sun.
- Shrubs and small trees can be placed to shade air conditioners and heat pumps. However, be careful not to plant too close to the unit, blocking air flow. Keep units free of leaves and needles.

- Plant a combination of evergreen trees and shrubs on the side of your home that blocks cold winter winds.

Environmental Benefits

Healthy trees convert carbon dioxide into oxygen, helping contribute to efforts to offset the production of carbon dioxide from electricity generation, cars and industrial processes. To help promote tree planting, preservation and urban forestry we support various organizations including Utilitree and Friends of Trees.

Tree Maintenance

Trees are the most common cause of electric service interruptions when branches fall on lines during high winds and storms. They also can cause outages, start fires or create other hazardous conditions if they grow too close to power lines. Every year, Spanish Fork City locates, prunes and removes potential problem trees in our service area to provide safe and reliable electric service.
If you'd like a tree pruned or removed for landscaping purposes, you'll need to hire a private tree removal contractor to perform the work. If necessary, we can disconnect a service line for their workers' safety. If only line clearance is of concern contact the Power & Light division of the City.

Safety Matters

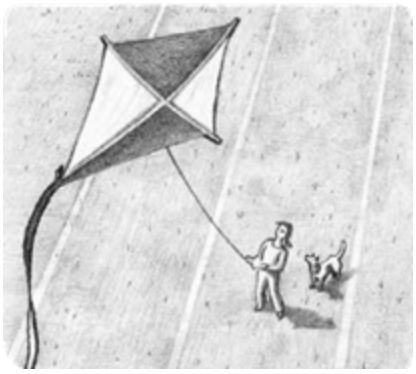
Electricity can be deadly. It must be used with the utmost care and respect. Improper or careless tree pruning can cause serious or fatal accidents around power lines. We offer a free safety presentation to remind customers of the dangers of electricity and to teach them how to be safe when trees and power lines coexist. For your safety, please remember these important tipes.

- Always check for power lines before pruning trees. If a branch is too close to a line, call us at 801-804-4629 or in case of an emergency after hours at 801-804-4440.
- Before digging holes for planting trees, installing sprinkler systems or setting fence posts, call 811 to reach your free underground utility locating service 48

hours in advance. Do not assume that utility lines are buried deeper than you are digging
- Do not attempt to remove branches or trees that have fallen on lines. Contact us at 801-804-4629 or after hours at 801-804-4440 for help
- Never touch or go near a fallen power line, and do not touch anything on which the wire is resting. If you see a downed line, tell others to stay away and immediately call 911, or call us at 801-804-4629 or after hours at 801-804-4440
- Look up! Whenever you're working outdoors, be aware of the location of overhead power lines. Be careful not to lift ladders, pruning shears, irrigation pipes, pool skimmers or other tools around power lines.
- Overhead power lines are not insulated. For your safety, treat all lines you see as energized and dangerous- stay away from them

Remind Children to Stay Safe

- Don't climb or build forts in trees near power lines.
- Do not climb power poles, transmission towers or substation fences
- Fly kites in open areas, far away from trees and power lines. If a kite does get caught in a power line, release the string



Resources for More Information

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Online Resource

National Arbor Day
www.arborday.org

International Society of Arboriculture
www.TreesAreGood.org

Friends of Trees
www.FriendsofTrees.org

GAMBEL OAK
Quercus gamb