Pruning for Utility Line Clearance

Why do utility companies have to prune trees?
- To ensure safe, reliable electric service, utility companies must prune branches away from high-voltage electric lines. If branches make contact with these lines, they can cause power outages. Worse yet, if children or adults climb a tree whose branches are growing up into energized lines, they could be electrocuted. Every year people are severely burned or killed while climbing trees and making contact with electric lines.

What is directional pruning?
- The most appropriate way to prune trees for electric utility line clearance is by directional pruning. This pruning method removes branches growing toward conductors in favor of those growing away. Reduction cuts are used for all branches that are pruned. With reduction cuts branches are pruned properly back to a lateral branch that is at least one-third the diameter of the branch being removed. This allows for good wound closure and protects apical dominance, which reduces water sprouting. In addition, directional pruning removes fewer leaves, which trees need for making food. Directional pruning actually removes fewer branches and increases wound closure, thereby reducing internal decay.

Don't top trees!
- In the past, utilities obtained line clearance by “topping” trees or “rounding” them over every few years. These techniques give little consideration to tree health or structural integrity. Current research shows that topping or heading cuts create entry points for wood decay. This slowly weakens the tree internally, shortening its life and in many cases causing future storm damage.

How will a tree look after it is directionally pruned?
- Trees growing directly under conductors appear U or V shaped. Trees growing alongside a conductor may appear L shaped from side pruning. At first the tree may appear misshapen, especially if you are looking down the curb line, but that changes over the years as the tree leafs out and grows in. Viewed from directly across the street, the form of a tree that has been pruned by directional pruning appears natural, with lines running through it. Directionally pruned trees stay healthier than topped trees, have a much better form, and require less pruning in the future because of the use of reduction cuts.

Won't the tree break apart once its center is cut out?
- If properly pruned back to sound lateral branches, free of internal decay, V-shaped trees do not split.
apart, even in storms. The tree’s strength is in its solid wood and strong natural branch attachments. Internal decay from poor pruning such as topping, or structural defects such as weak branch unions often are factors in tree failures. Directional pruning is done to minimize decay and improve weak branch unions.

- If you see defective trees that pose a threat to electric lines, property, or people, please contact your local utility company. They may be able to remove the tree. If you have further concerns about a tree’s safety, contact an International Society of Arboriculture (ISA) Certified Arborist to perform a professional evaluation. (A list of certified arborists can be found at www.isa-arbor.com)

A local tree service or landscaper told me this is bad for my tree.

- Misinformation abounds regarding tree-pruning practices. The American National Standards Institute publishes the ANSI A300 Standards for Tree Maintenance. These standards are recognized and approved by the National Arborist Association, the ISA, and the USDA Forest Service. Directional pruning for trees in conflict with utility lines meets these guidelines, while tree topping is a prohibited practice. In addition, the National Arbor Day Foundation recognizes utilities that practice proper tree pruning and train their contract crews by providing them with awards such as the Tree Line USA Award.

- Directional pruning is promoted by Pennsylvania Community Forests, the Pennsylvania DCNR Bureau of Forestry, and the Energy Association of Pennsylvania as the proper way to prune trees in conflict with electric lines.

What other options do I have for dealing with trees that are growing into power lines?

- First, avoid having your tree topped or rounded over. That will only remove more foliage, make more pruning wounds, and stress the tree, causing unstable decay and water sprouting. The best long-term solution for tree-utility conflicts is to remove large trees and replace them with compatible species that will mature to a lower height than the electric conductors. Or plant trees far enough from utility lines that they will not make contact. Tree species such as crabapple, Hawthorn, serviceberry, dogwood, hedge maple, or Japanese tree lilac are compatible replacements for large trees. For more information, see the references listed below or contact your local utility forester, Penn State Cooperative Extension office, or the DCNR Bureau of Forestry office and ask for information on utility-compatible tree species.

[Image: Utility compatible flowering crabapple tree]

Prepared by William Elmendorf, assistant professor of urban and community forestry, Vincent J. Cotrone, northeast urban extension urban forester, and Bill Taylor, systems forester, PPL Electric Utilities

For more information


Modern Arboriculture. Shigo and Trees, Associates, 4 Denbow Road, Durham, NH 03824-5105.

How to Prune Young Shade Trees. (Other publications on tree care and maintenance are also available.) The National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410. Phone: 402-474-5655.


Tree-Pruning Guidelines. (Other publications on tree care and maintenance are also available.) International Society of Arboriculture, PO Box GG, Savoy, IL 61874. Phone: 217-555-9411.

Trees Are Good. Created by the International Society of Agriculture to provide the general public with quality tree care information. www.treesaregood.com


This fact sheet was prepared with guidance from the Pennsylvania Community Forests and support from the Pennsylvania DCNR Bureau of Forestry. For more information, contact the Pennsylvania Urban and Community Forestry Program, School of Forest Resources, The Pennsylvania State University, 334 Forest Resources Building, University Park, PA 16802; 814-863-7941.

Visit Penn State’s College of Agricultural Sciences on the Web: www.cas.psu.edu

Penn State College of Agricultural Sciences research, extension, and resident education programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This publication is available from the Publications Distribution Center, The Pennsylvania State University, 112 Agricultural Administration Building, University Park, PA 16802. For information telephone 814-865-6713.

This publication is available in alternative media on request.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at the Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5911; Tel 814-865-4700/7, 814-863-1150/TTY.

© The Pennsylvania State University 2007

Produced by Information and Communication Technologies in the College of Agricultural Sciences

Code # UH180 5M207mcp3923a