

AEP: America's Energy PartnerSM

System Forestry

Goals, Procedures & Guidelines for Distribution and Transmission Line Clearance Operations

March 5, 2004

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AEP System Forestry Guidelines

Foreword

A. Introduction

The purpose of these Guidelines is to document and inform AEP employees and contractors about important guidelines pertaining to AEP's System Forestry Program. AEP incorporates these Guidelines into each tree service contract; a copy shall be kept in all tree service Contractor vehicles. These guidelines are for the sole and exclusive use of the contractor and are to be read consistently with other contract documents by and between AEP and the Contractor.

B. Definitions

Brush: Woody stem vegetation less than four inches DBH.

Clearing: The physical cutting and/or removal of woody stem vegetation within the right-of-way.

DBH: (Diameter at Breast Height). The diameter of a tree measured at the height of 4-1/2 feet above the ground on the uphill side.

Danger Tree: A tree considered a potential hazard to AEP's facilities growing outside of the normally cleared right-of-way.

Debris: Non-vegetative material such as pop bottles, cans, wire, paper and old tires.

Fallen Tree: A tree lying on the ground not cut by the Contractor.

Hangers: A limb cut from a parent stem or bole of a tree as part of the line clearance pruning procedure left aloft caught and held by the other branches of the tree.

Hazard Tree: A tree considered a potential threat to the safety and reliability of AEP's facilities growing within the normally maintained right-of-way.

Log: The merchantable portion of a tree as designated by AEP.

Lopping: The cutting of limbs and slash so that they lie in contact with the ground or as otherwise designated by AEP.

Mowing: The mechanical cutting of woody stem vegetation within the right-of-way.

Prescription: The plan prepared for each circuit or unit of work. It designates the vegetation to be maintained, the method(s) of maintenance, and who will perform the work.

Property Owner: Party from whom easements have been secured, their successors or assigns.

Removal: The complete cutting down of trees at or near the ground line. AEP shall specify the disposal method.

Rolled Back: The reduction of a pruned tree's crown in a manner that provides increased conductor clearance by pruning to shape the upper crown area away from the conductors.

Slash: The un-merchantable portion of a tree as designated by AEP.

Tree: Woody stemmed vegetation with a DBH of four inches or more.

i. Contractor Guidelines

A. Safety

Protecting the safety of the public is of utmost importance to AEP. Contractors shall regard safety as their first priority. Contractors and their employees will recognize and follow all laws, rules and regulations regarding public and worker safety. Any personal injury accidents that occur on the job must be reported to the appropriate AEP personnel as soon as possible.

B. Personnel

1. If required by state or local laws and regulations the contractor shall have an ISA Certified Arborist available.
2. No private work may be solicited or worked by Contractor employees while on AEP time. Contractors shall not receive compensation from anyone except AEP for tree work that is a part of AEP's System Forestry program. The consequences will be crew and/or contractor disciplinary action.

C. Equipment

1. Contractors shall provide sufficient equipment in working order to operate their business.
2. The minimum number of chain saws on the job shall equal the number of personnel on the crew, or as per contract agreement. Chainsaws shall not be billed separately unless approved by AEP system forestry personnel.
3. Each climber shall be provided with a complete set of equipment including: rope, saddle, chainsaw, pruner and handsaw.
4. The use of spurs/climbers is to be avoided. Where their use is required (as in the removal of some trees or in climbing trees which do not provide a notch in which to tie in) only qualified persons shall be permitted to use them.
5. As the appearance of the Contractor work force reflects on AEP, a professional appearance and a professional attitude towards the public shall be maintained. All equipment must be kept in good repair and appearance, and be operable and ready to go before the crew arrives at the job site. The Contractor is to advise AEP if any equipment is not operable. The Contractor and AEP will jointly determine if the assigned Work can be accomplished in an efficient manner or if other Work can be performed until the inoperable equipment is back in operation. The crew will not be worked and their time will not be billed to AEP unless the Work can be performed efficiently or other Work performed as jointly determined. AEP will not pay for any equipment not in satisfactory operating condition. If the Contractor does not notify AEP of inoperable equipment, it will be assumed that the equipment was not in working order for eight (8) hours prior to AEP becoming aware of the trouble. Invoices will be adjusted accordingly. Personal vehicles shall not be utilized as a substitute for inoperable equipment. Personal vehicles shall not be taken to the work site.

If AEP determines that the appearance of any of Contractor's equipment does not project a professional image, Contractor shall be notified. AEP and

Contractor shall agree to the corrective measure to be taken to remedy the appearance and to the time frame by which the remedy must be made. If such remedy is not made or an extension is not granted by AEP, that equipment must be pulled from service until such remedy is effected. Equipment pulled from service for the remedy of appearance shall not result in any crews running short of equipment nor in any additional cost for replacement equipment.

Any maintenance other than minor repairs shall be performed on the Contractor's time and shall not be billed to AEP.

D. Outages

All outages or operations caused by contract crews shall be reported to the appropriate AEP Dispatch center and System Forestry immediately. Any line contact on transmission shall be reported to the appropriate dispatch center and System Forestry immediately. Costs to restore contractor caused outages may be billed to Contractor as determined by AEP Forestry, as agreed to under the General Terms and Conditions for Labor and Services.

E. Overtime

Overtime is billable for work performed outside the scope of the normal work schedule.

F. Work Procedures

1. The contractor will be responsible for the development of a plan to work the assigned tasks. The assigned tasks must be performed in a systematic way that follows this plan. Some examples are: beginning work at substations, working between protection devices, or other methods to prevent skipping around on the system. The plan must meet AEP approval before work begins.
2. It is the Contractor's responsibility to ensure that the plan is followed, including time estimates to complete assigned tasks.
3. Contractor shall provide daily work locations to AEP, including changes to these locations.
4. Each crew shall have a planned worksheet present all times, except in the case of emergency work.
5. The Contractor's daily association with their crews and customers will allow planned outages and refusals to be worked on a progressive basis. A written list of such areas that have not been worked, including reasons, shall be supplied to AEP Forestry personnel. Undocumented skips may be worked at the Contractor's expense.
6. AEP Forestry personnel may conduct inspections of Contractor's work on an ongoing basis. When an assigned task is complete the Contractor must notify AEP Forestry for final inspection.
7. The Contractor will notify AEP of any hazardous conditions found during the performance of work under this contract. This is to include danger trees, soil

erosion, or any attachment to AEP's facilities, deteriorated, damaged or broken facilities and any other abnormal conditions.

G. Public Relations

1. Public relations are important to AEP. Proper notification can eliminate most property owner issues before they arise. Advanced notification provides the property owner with an opportunity to voice concerns. An attempt will be made to contact property owners through personal notification, door hangers, news releases, certified letters, etc. AEP will attempt to contact an absentee landowner only if the resident provides AEP with a method to contact the property owner.
2. When appropriate, the Contractor will knock on each property owner's door announcing the arrival of the crew for work.
3. During emergency work, Contractor will make an attempt to notify the property owner of the crew's arrival. Discretion should be used during late night or early morning work. If no property owner contact is made, a door card should be left to explain work performed.
4. Contractor will document all locations where door cards were left, including address and date. A monitored local or toll-free telephone number to reach the contractors should be on each card.

H. Refusals

1. A "refusal" is considered to be any resident or property owner refusing to allow or permit the contractor to clear vegetation as specified within the scope of, and according to, these guidelines and specifications.
2. The contractor will fill out a refusal/complaint form with pertinent information for all refusals.
3. If the contractor is unable to resolve the refusal within one week, the refusal shall be turned over to the appropriate AEP Forester.
4. Undocumented refusals or those left unaddressed for more than one week by the contractor may be worked at the Contractor's expense.

I. Damage Claims and Complaints

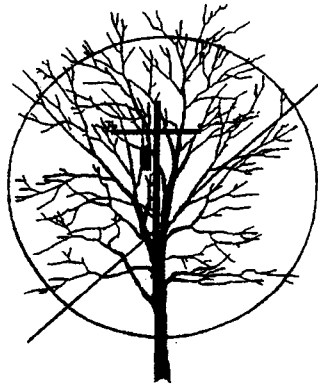
1. The Contractor shall be responsible for all damage claims and complaints as outlined in the agreed to General Terms and Conditions for Labor and Services. AEP shall be notified immediately of all claims and complaints. For cases involving livestock or domestic animals, AEP may choose to have a veterinarian investigate the situation.
2. An on-site investigation with the resident or property owner shall be made as soon as possible. This meeting, or telephone arrangements for the investigation, shall be made within twenty-four (24) hours of receipt of the complaint. AEP's representative may accompany the Contractor during this initial investigation.

3. All valid claims resulting from the Contractor's negligence are to be settled within thirty (30) days by the Contractor, or the Contractor will provide evidence he is trying to reach a reasonable settlement.
4. The Contractor shall keep AEP informed of the status of all complaints. When a settlement is reached, a written release for both AEP and the Contractor shall be obtained from the property owner.
5. If a settlement cannot be reached, the Contractor will confirm in writing to AEP the final settlement offer and briefly summarize events pertaining to the offer.
6. After thirty (30) days, if a Contractor fails to resolve a claim, does not continue attempts to resolve the claim or keep AEP fully informed, AEP may settle the claim and bill the Contractor.

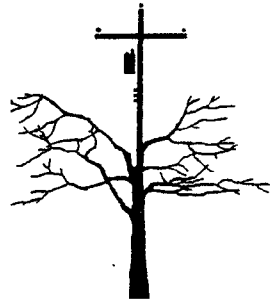
II. Performance Guidelines

A. Removals

1. *AEP Tree Removal Philosophy:* Tree removal is a very important part of AEP's line clearance program. In residential areas, authorization of the property owner, AEP System Forestry, or appropriate government agency is required for the removal of a tree.
2. Stumps shall be flush cut (three inch maximum height) and treated with an approved herbicide, unless designated otherwise by AEP.
3. Tree removal shall be completed in one operation. If this is not practical, hazardous conditions shall not be left while the work is not actively in progress. Trees shall be removed in a manner to protect yards, fences, houses, electric lines and other facilities.
4. Targets for removal are:
 - All trees with the potential of growing into the conductors.
 - Trees where adequate clearance cannot be obtained using proper pruning practices.
 - Trees that will take less than three times the amount of time to remove as they would take to prune.
 - Trees within five (5) feet of poles.
 - Mature trees where more than 50% of the crown must be removed to obtain clearance.
 - Young vigorously growing trees where more than 66% of the crown must be removed to obtain clearance.
 - Palm species.
5. Trees that may *not* be candidates for removal are:
 - Those that would take more than three times longer to remove than to prune for proper clearance and at least 50% of the crown would be left intact.
 - Species that will not reach a height that could affect the conductors.
 - Slow-growing tree species.



Tall Maturing/Fast Growing



Short Maturing/Slow Growing

5. Deciduous stumps will be treated with an herbicide to prevent regrowth unless the situation prevents application according to label instructions, there is a documented customer refusal or an AEP System forester directs otherwise.
6. Diseased, dying, or dead trees that could threaten conductors will be made safe allowing for removal by the customer or private arborist. All brush and wood generated by this activity should be left on site.

B. Pruning

1. AEP Pruning Standards and Philosophy

All tree pruning shall be governed by approved principles of modern arboriculture and shall adhere to Tree Care Industry Association (TCIA) and International Society of Arboriculture (ISA) standards. AEP System Forestry personnel may grant exceptions to these pruning standards where mechanical trimming equipment is used. Pruning shall be done in a manner that protects current tree health and with regard for future growth and development. Pruning shall provide at least the minimum specified clearance from electrical conductors as set forth in Section II, B, 5 and 6.

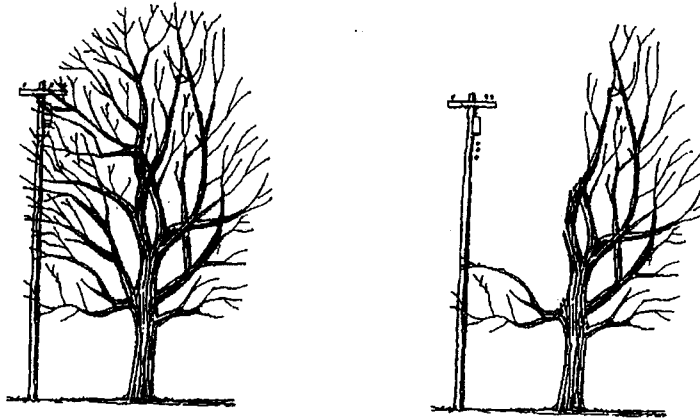
Care shall be exercised to prevent the spreading of insects or diseases from one tree to another.

Wild cherry, black walnut and other toxic vegetation that has been cut or damaged, shall be removed from areas accessible to livestock as appropriate.

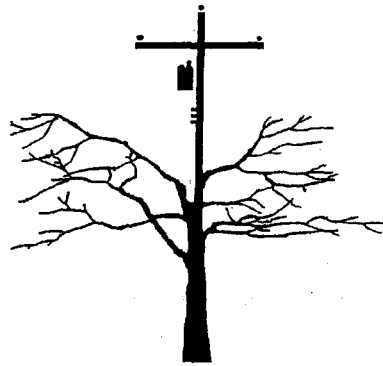
2. Directional Pruning

It is AEP's practice to prune trees in a manner that will direct growth away from electrical conductors, thus reducing the amount of pruning necessary in the future.

Trees growing to the side of conductors should have their horizontal growth removed back to a lateral or the parent stem and the vertical growth left rolled back.



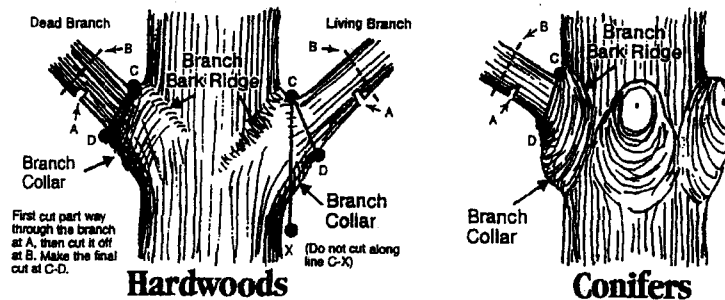
Trees under the lines should be pruned using the "natural" or "drop crotch" method of top pruning. Vertical growth should be removed and horizontal growth left.



Note: Fast growing, large maturing trees left in this condition are good candidates for removals.

3. Collar Cuts

The position and manner of making cuts is of the utmost importance. The most important single item in tree pruning is the "collar cut" (see diagram below).



When properly made, collar cuts reduce the pruning wound surface area (compared to flush cuts) and allow the tree's chemical protective zones to aid in callus growth and eventual wound coverage. Collar cuts also reduce epicormic sprouting and regrowth of vegetation into conductors.

- a. All limbs will be cut back to laterals at least one-third (1/3) the size of the limb being removed.
- b. Care shall be taken to avoid damage to the cambium layer, or loosening or stripping of the bark.
- c. The three (3) cut method to remove large limbs will be used to eliminate bark peels.

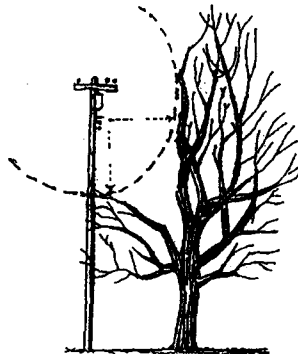
4. Tree Shape

- a. Trees should be pruned to provide the required clearance from electrical conductors. After that job is accomplished, the shape of the tree can be taken into consideration.
- b. When poorly shaped trees must be left, Contractor is empowered to do cosmetic pruning to satisfy the customer, using approved methods within a period of time that does not exceed the time spent on the original line clearance pruning. Rounding over is *not* an approved practice.

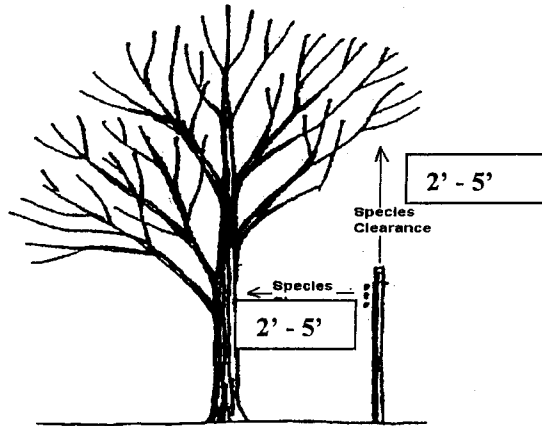
5. Clearance - Distribution

Minimum clearance for distribution system lines is that distance that will prevent regrowth into any AEP conductors for a minimum of 3 years (see Table I in the appendix). The species, site, limb and conductor sag and sway during windy conditions and the effect of electrical load should all be considered when determining the clearance requirement.

Primary - Should be pruned for a minimum of 3 years clearance. Overhanging limbs should be removed. Top of tree should be rolled back unless prior arrangements have been made with the appropriate AEP System Forestry representative.



Open Wire Secondary - Should be pruned for 2 to 5 feet of clearance without removing overhanging branches unless otherwise specified by an AEP System Forestry representative.



Twisted or Cabled Secondary, Service Drops & Street Lights – Trees near twisted or cabled secondary service drops and street light wires will not be pruned unless limbs are applying pressure to the line. Do not prune for street light illumination except under the specific direction of the appropriate AEP System Forestry representative.

Guy Wires – Trees near overhead and down guys shall only be pruned of heavy limbs applying pressure on the wires.

Poles - All poles will be cleared of all volunteer trees, brush, and slash to obtain a minimum of a five (5) foot radius of clearance around the pole.

Vines - Should be cut and treated with an herbicide to prevent regrowth, but not removed, as pulling on them will threaten the wires and the climber.

6. Clearance - Transmission

Minimum clearance from transmission conductors should be species clearance plus a climber safety zone of OSHA required "separation" for various transmission voltages and is based on maximum sag of conductors. Table I (page 14) specifies distances from vegetation to electrical facilities.

7. Hangers and Clean Up

- a. All hangers shall be removed from the tree before leaving the job site.
- b. Work sites shall be left in a neat and orderly condition.
- c. A minimum amount of clean up work should be performed, especially when a property owner requests a tree be removed. Unless otherwise designated by AEP, wood shall not be cut up or hauled away. Where designated by AEP, chipping the brush, cutting wood into lengths that can be handled and raking the site is the maximum clean up that should be performed.
- d. All streams and/or drainage ditches shall be kept open while working in the area and shall be cleaned out after Contractor's operation is completed in the area.

C. Clearing and reclearing

- a. AEP System Forestry will provide the width of the right-of-way.
- b. All woody plants that have the potential to grow into the lines, should be controlled, either by mechanical removal, herbicide treatment or a combination of both. Those woody plants within the right-of-way that at mature size normally would not threaten lines or interfere with access to AEP's facilities, should be left undisturbed in the right-of-way whenever possible.
- c. Trees, brush, and existing stumps within the right-of-way shall be cut as close to the ground as practicable, but not to exceed three inches in height above the ground line. Where possible, the cut shall be parallel to the slope and promptly treated with an approved herbicide, unless otherwise directed by AEP System Forestry.
- d. Trees shall be felled to avoid damage to crops, fences and other facilities. Any trees felled into crops, ditches, streams, roads or across fences shall be promptly removed. No trees shall be felled in such a manner as to endanger AEP's facilities or the property of third parties, or hinder access along the right-of-way.
- e. Trees, brush and slash shall be lopped as designated by AEP System Forestry.
- f. Danger trees shall be removed or pruned to eliminate the hazard. When cut, danger trees shall be cut as low as practicable, but not to exceed eight inches in height above the ground line. The logs and slash shall be left as felled, unless otherwise designated by AEP System Forestry.
- g. Stumps of trees growing in fences may be cut at fence post height, where designated by AEP System Forestry.
- h. Logs may be left in tree lengths or as designated by AEP System Forestry. The merchantable value of logs shall be preserved as much as possible.
- i. In remote areas, brush and logs may be piled at the edge of the ROW for wildlife habitat. Logs may be left in large sections rather than cut to firewood length.
- j. Brush should not be left in managed agricultural areas or other maintained areas unless designated by AEP System Forestry.

D. Herbicide Applications

- 1. All woody plants that have the potential of growing into the lines, should be controlled. Those woody plants within the right-of-way that at mature size normally would not threaten lines or interfere with access to AEP's facilities, should be left untreated in the right-of-way whenever possible.
- 2. All herbicides shall be applied according to label instructions.
- 3. Herbicide application shall be done in accordance with Federal, State and local laws. Contractors are required to maintain accurate and up to date records of all herbicide applications made and are required to abide by all Federal, State, and Local laws concerning licensing, record keeping and product handling.
- 4. Contractors shall attain 100% coverage and 95% control of treated vegetation.

5. AEP System Forestry will make vegetation management prescriptions in consultation with contractors.
6. Whenever possible landowners should be notified before any herbicide treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger.
7. Managers of public rights-of-way involved in the treatment area shall be notified, where appropriate.
8. Contractor shall be responsible for training of herbicide applicators.
9. Unless specifically prohibited by property owners or AEP System Forestry, stumps will be treated with an appropriate herbicide treatment.

E. Tree Growth Regulator Application

1. Trees designated for tree growth regulation shall be treated with an approved tree growth regulator (TGR) in accordance with label instructions.
2. All trees shall be inspected by the Contractor for health and vigor prior to treatment. Trees found in an excessive state of decline shall not be treated unless directed by AEP System Forestry.
3. Soil applied tree growth regulators shall not be used where susceptible non-target tree roots could come into contact with the material.
4. Whenever possible landowners should be notified before any TGR treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger.

APPENDIX

TABLE I

Line Clearance Guidelines

These growth rates and clearance distances are guidelines for the minimum clearances required. These distances are not static and should serve as *minimum clearance* requirements. The total clearance requirements on the transmission system are these distances *plus* the OSHA minimum approach distance from energized conductors as required by voltage for qualified line clearance tree arborists. Good soils and high moisture may cause many species to grow faster. These clearance guidelines are not meant as a requirement for all trees on AEP's rights-of-way. It is understood that during maintenance intervals, trees may encroach into these minimum clearance zones. The guidelines are meant to be used a guide for trimming those trees currently being maintained.

MINIMUM CLEARANCE FROM CONDUCTORS

- **Species with Fast Regrowth Rates:** Prune for a *minimum* clearance of 20 feet from conductors

Cottonwood	Willow
Poplar species	Ailanthus
Silver maple	Box Elder

- **Species with Medium Regrowth Rates:** Prune for a *minimum* clearance of 15 feet from conductors

Locust	Hackberry
Red maple species	Hickory
Ornamental pear species	Crabapple
Fruit trees (apple, pear, etc.)	Red oak
Elm species	Ash species
Pine, Spruce & Hemlock species	Mulberry
Sweet gum	Sycamore
Bois d'arc (Osage orange, hedge tree)	

- **Species with Slow Regrowth Rates:** Prune for a *minimum* clearance of 10 feet from conductors

Catalpa	Cedar
Chinaberry	Persimmon
Magnolia	White oak (round lobes)
Any small variety species (Redbud, dogwood, etc.)	

- **Possible Exceptions:**

- When the entire trunk of a tree falls within the minimum clearance specifications.
- When due to the branching structure of the tree less trimming would lend itself to an overall healthier tree, yet with acceptable clearance.
- Isolated instances approved by AEP System Forestry representative.