

Appalachian Power Company Policy / Procedure No. 4:
Tree and Pole Cutting

1) Statement of Policy

Tree trimming/clearing is a hazardous task that should only be undertaken by employees well trained in the safe procedures for chainsaw operation. Employees involved in tree trimming or removal shall follow the procedures outlined below. Special attention must be paid to communications with other crew members and the position of other crew members and the public relative to the fall zone for the trees / limbs being removed.

Similarly, cutting an un-needed pole down is also a hazardous task, avoiding potential injuries during this operation requires a specific plan to eliminate line of fire hazards and to protect the saw operator and others from potential injury.

2) Discussion

Because tree trimming is not normally part of our everyday job and since most of our tree clearing efforts are during service restoration an in-depth job briefing shall be conducted prior to the start of any tree cutting activity.

- Identify the scope of the problem
- Review the techniques needed to control the problem
- Evaluate your level of skills and those with you – ask for advice
 - To maintain control of the chain saw, always use both hands in the proper position when operating it.
- Stress that everyone remain out of the **line of fire**
- Know your **limitations** – It's OK to request help

While the hazards associated with tree trimming are more obvious, the hazards associated with cutting a pole down tend to be more subtle and will tend to lull those involved with that operation into a state of complacency. A number of injuries have occurred during pole cutting operations so strict compliance with the procedures outlined below is essential to insure a safe outcome.

In any job involving tree or pole cutting, the act of cutting the tree or pole will be a critical step. The crew shall identify the tree or pole cutting as a critical step and run that step through the SAFER model to be sure that they have identified all of the potentials for error, their consequences and their defenses including layers of protection needed before proceeding.

The following procedures are applicable for tree trimming and removal and pole cutting operations:

I. HAZARD RECOGNITION FOR LIMB OR TREE REMOVAL AND FOR POLE CUTTING

The following items shall be included in the Job Briefing:

- A. PPE Requirements
 - 1. Hardhat
 - 2. Work gloves
 - 3. Safety glasses
 - 4. Chaps (when working on the ground)
 - 5. Ear plugs or muffs (optional)
- B. Employee and Public Safety

- C. The limb/tree condition and location
 - 1. Stress forces (stored energy)
 - 2. Decay, rot, or cracks.
 - 3. The shape, balance, and size of the limb/tree (ice or snow laden).
 - 4. The lean of the limb/tree.
 - 5. Terrain and work area limitations.
 - 6. Soil conditions (moisture, depth)
- D. Pole condition and location
 - 1. Stress forces (stored energy)
 - 2. Decay, rot, or cracks; knots in the area where cuts will be made.
 - 3. The rake of the pole.
 - 4. Terrain and work area limitations.
- E. The surrounding area
 - 1. Private property
 - 2. Hidden objects
 - 3. Other utilities
 - 4. Other Trees or vegetation
- F. Wind force and direction.
- G. Identification of the hazard area.
 - 1. A fall zone minimum of two times the height of the limb/tree or pole
 - a) Clear all individuals and equipment not directly involved with the work.
 - 2. Line of Fire (Aloft or on the ground)

II. LIMB/TREE REMOVAL

- A. Principal Hazards
 - 1. Being struck by limb/tree
 - 2. Kick back of limb/tree
 - 3. Flying debris
 - 4. Cut by saw
- B. The following shall be considered before beginning any tree or limb removal operation:
 - 1. The public shall be kept well clear of the operation, as stated in Hazard Recognition, with special attention given to children. Should anyone enter the cleared area, the operation **shall be immediately stopped until the area is again cleared.**
 - 2. Prior to any notch cuts being started by the saw operator, the person in charge shall establish that the saw operator has a clear **unobstructed escape route**. For felling operations this would be at an angle of 45 degrees on either side to the rear of the planned direction of fall.
 - 3. Branches being roped out of a tree shall be rigged so that no unexpected movement will result which might cause injury or property damage.
 - 4. If a rope is used, those handling the rope on the ground shall be stationed well beyond the possible reach of the tree, at least a distance equal to '2 times' the height of the limb/tree.
 - 5. The major forks of multiple stemmed trees shall be removed individually.
 - 6. Make the undercut or notch.
 - a) ***Give a verbal warning before starting the cut and get a verbal response from each person on the job site.***
 - b) Make the notch exactly in the intended direction of fall.
 - c) The depth or penetration of the notch should be about one-third of the diameter of the tree.
 - d) The opening of the notch should be about 4 inches for each foot of diameter of the tree

7. Make the back cut, or finish cut.
 - a) *Give a verbal warning before starting the cut and get a verbal response from each person on the job site.*
 - b) The bark cut or finish cut shall be at least two inches higher than the undercut so that the tree will not kick back when falling.
8. Before the back cut is completed, stop and make a last visual check to be certain everyone is in the clear
9. Just before the tree starts to fall give an audible warning
10. Turn off the saw.
11. Get clear of the tree
 - a) If the saw binds in the cut or is dropped, leave it, and use the established escape route.
 - b) Watch for flying limbs and limbs that may be knocked from adjacent or nearby trees.

III. LIMBING A FALLEN TREE

- A. Principal Hazards
 1. Cut by saw.
 2. Struck by springing branches.
 3. Struck by rolling log (tree).
- B. When limbing a fallen tree.
 1. When practical, stand on the side opposite from the limb being cut, and on the uphill side of the work.
 2. Establish secure footing.
 3. Examine limbs being cut for potential ‘stored energy’ sources. Take measures to control the release of that energy.
 4. Do not cut limbs that are propping logs, unless the probable shift of the log can be controlled.

IV. BUCKING

- A. Principal Hazards
 1. Cut by saw.
 2. Struck by rolling log (tree).
- B. When bucking
 1. Establish solid footing free of tripping hazards.
 2. Always anticipate the probable movement of the wood being cut.
 3. Work on uphill side, whenever practical, or secure log when not uphill.
 4. If necessary, block the tree to prevent roll.
 5. To prevent the saw from binding, slope the cut so it will open the cut, block it up, or use a soft or wood wedge to hold the cut open.
 6. Use a cant hook to roll large logs.

V. CUTTING DOWN POLES

- A. Principal Hazards
 1. Being struck by pole
 2. Kick back of pole
 3. Cut by saw
 4. Flying debris
- B. The following shall be considered before beginning any pole cutting operation:
 1. The public shall be kept well clear of the operation, as stated in Hazard Recognition, with special attention given to children. Should anyone enter the fall and strike zone, the operation **shall be immediately stopped until the area is again cleared.**
 2. Before the saw operator starts any cuts, the person in charge shall establish that the saw operator has a clear **unobstructed escape route.** For felling

- operations, this would be at an angle of 45 degrees on either side to the rear of the planned direction of fall (see attached diagram). Once the sawing operation starts, the saw operator is in control of the job site and is responsible for assuring that the fall and strike zones are clear at all times until the pole is on the ground.
3. For positive control of the pole, the preferred cut is the “jump cut” where the saw operator makes two horizontal cuts just past the center line of the pole separated by a vertical range of 15 - 20 inches then uses pre-planned escape route to get completely out of the fall and strike zones before those manning the rope pull on it splitting the wood of the pole and causing it to fall in the intended direction. A notch cut is acceptable in certain circumstances where a jump cut may be impractical.
 4. A rope shall be used to initiate and control the fall for the jump cut and to control its fall when a notch cut is used, those handling the rope on the ground shall be stationed well beyond the possible reach of the pole, at least a distance equal to ‘2 times’ the height of the pole.
 5. Cut down the pole – jump cut
 - a) Make the first cut.
 - (1) ***Give a verbal warning before starting the cut and get a verbal response from each person on the job site.***
 - (2) Plan your cuts by marking the pole where you intend to make those cuts and marking the centerline of the pole to give you a target for stopping your cut. The first cut shall be horizontal and cut into the side of the pole in the direction of its intended fall, this cut shall be the lower of the two cuts.
 - (3) Be sure that there aren’t any large knots in the area between the top and bottom cuts.
 - (4) The depth or penetration of the cut should be just an inch or two past the center line of the pole.
 - b) Make the second cut.
 - (1) ***Give a verbal warning before starting the cut and get a verbal response from each person on the job site.***
 - (2) The second cut shall be approximately fifteen to 20 inches higher than the first cut so that the pole will not kick back when falling. This cut will also be horizontal and will start on the side of the pole away from its intended direction of fall.
 - (3) The second cut should penetrate the pole just an inch or two past the center line of the pole.
 - c) When the second cut is complete, saw operator shall stop the saw, re-check that the completed is as planned and follow the pre-planned escape route until completely out of the fall zone.
 - d) Check to see that everyone is out of the fall zone and then signal the rope handlers to pull the pole down. The wood of the pole will split at the end of the second cut and then fall, with some speed, in the direction the rope is pulled. If the pole does not break off after a hard tug, assure the pole is stable and then re-enter the fall and strike zone and inspect the area between the cuts for knots. Determine a course of action for completing the operation which may involve employing a notch cut using the bottom horizontal cut as the base of the notch.
 6. Cut down the pole – notch cut
 - a) Make the undercut or notch.
 - (1) ***Give a verbal warning before starting the cut and get a verbal response from each person on the job site.***
 - (2) Make the notch exactly in the intended direction of fall.

- (3) The depth or penetration of the notch should be about one-third of the diameter of the pole.
- (4) The opening of the notch should be about 4 inches for each foot of diameter of the pole.
- b) Make the back cut, or finish cut.
 - (1) ***Give a verbal warning before starting the cut and get a verbal response from each person on the job site.***
 - (2) The finish cut shall be at least two inches higher than the undercut so that the pole will not kick back when falling.
- c) Before the finish cut is completed, stop and make a last visual check to be certain everyone is in the clear
- d) Just before the pole starts to fall give an audible warning
- e) Turn off the saw.
- f) Deliberately and with haste, get clear of the pole
 - (1) If the saw binds in the cut or is dropped, leave it, and use the established escape route.
 - (2) Watch for flying debris from the pole after it hits the ground.

3) Definitions:

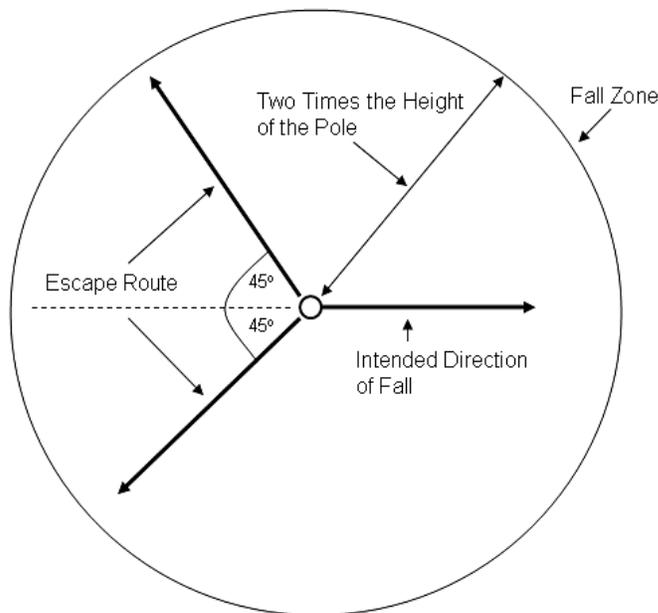
Line of fire – A physical position that lies within the zone where potential hazards exist should stored energy be released. (i.e.: a tree limb or pole)

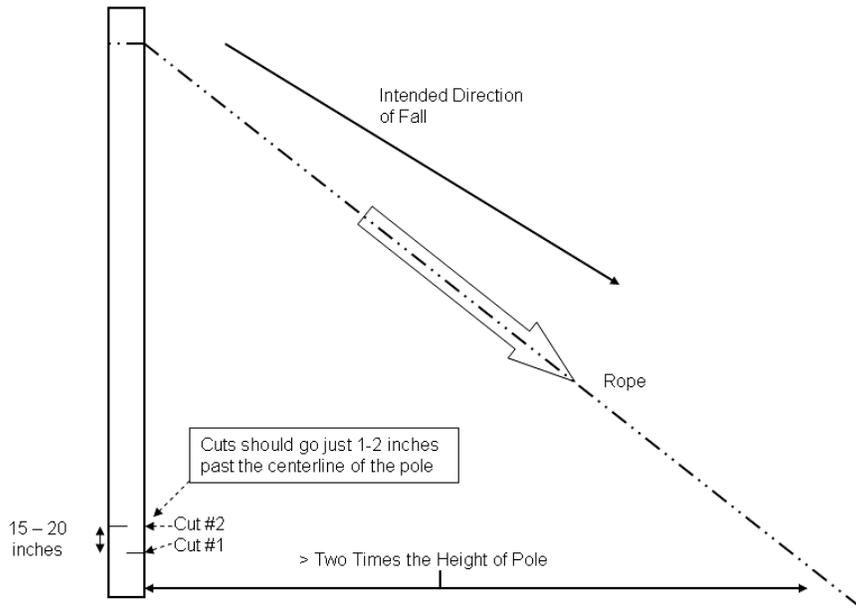
Fall zone - A 360 degree area in which an uncontrolled object has a potential to fall at any given time and without warning. (a pole is only controlled when it is in the ground and held by the pole claws)

Strike zone – The area where an object possessing stored energy is likely to travel if that stored energy were released. (i.e.: The area where a rope under tension would whip if it were cut)

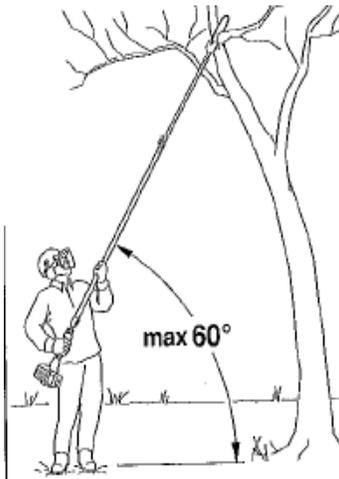
4) Attachments:

Attachment 1: Fall Zone and Escape Route





Attachment 2: Tree Cutting with a Stihl Pole Pruner saw:



This tool can be very useful, but it requires special precautions when being used. Unique hazards and requirements are outlined below, two points need to be emphasized before discussing procedures specific to this tool:

- The pole pruner saw **is not** a live line tool and shall not be used within the minimum approach distance of an energized conductor.
- The same hazards that are involved with tree cutting exist with the use of a pole pruner saw so **all provisions** of this procedure must be applied when using it.
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There are two significant hazards associated with the use of this saw: 1) cutting limbs overhead while standing in the line of fall, and 2) the possibility of the cuttings to slide down the shaft of the saw into the arms and face of the operator. These two hazards must be considered and mitigated when operating this saw:

1) *Standing in the line of fall:*

The Stihl owner's manual restricts the use of this saw to a maximum **60 degree angle** which keeps the operator out from under the falling limbs. Asplundh tree experts have reported this to be a significant hazard to be avoided.

The operator must keep control of the pole pruner by maintaining a proper footing and not positioning yourself underneath the limb being cut (either on the ground or in a bucket). Use extreme care in wet and freezing weather. Avoid stumbling

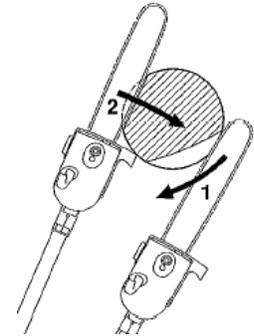
on obstacles such as stumps, roots, and rocks. Hold pruner firmly with both hands keeping the control handle and shaft between your thumb and forefinger. Keep your hands in position to maintain control at all times. Place your left hand on the front handle and your right hand on the rear handle and throttle trigger as shown. Don't put pressure on the pole pruner when reaching the end of a cut, establish a path of escape, remove obstacles and move away from fallen limbs. Do not cut vertically above your body; hold the pole pruner at an angle of not more Than 60 deg. As soon as the limbed branch starts to fall, step aside and keep distance away from falling wood.

2) Cuttings sliding down the shaft of the saw

The Stihl owner's manual specifies that the following sequence be followed:

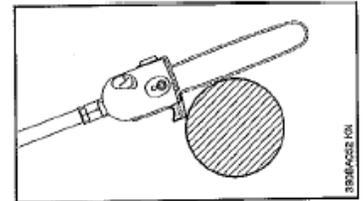
Cutting Sequence:

1. Always cut the lower branches first.
2. Prune heavy branches
3. Cut the limb in several controllable pieces
4. Hold the shaft at an angle of 60 degrees or less.
5. Always start by performing a relieving cut (1) on the **underside** of the branch
6. Locate the hook against the branch and then perform the cross-cut (2).



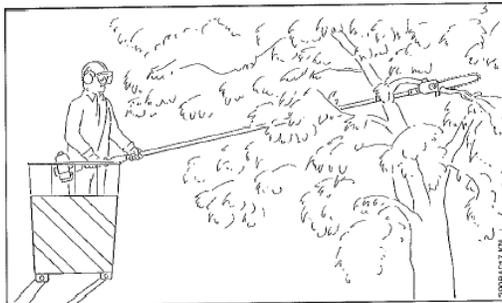
Cutting the branches off the limb and performing the undercut **FIRST** will position the saw above the falling limb and prevent the cutting from sliding down the shaft. If the circumstances will not allow the final cross-cut on top of the limb, then another saw or procedure should be considered.

Cross-cut



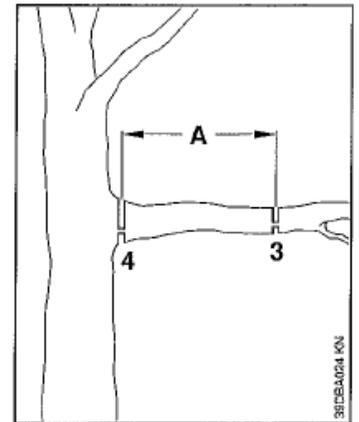
Flush Cutting Thick Branches:

If a branch diameter is more than 4", first perform an undercut (3) and then a cross-cut (3) at a distance of about 8" (A) from the final cut. Then carry out the flush cut (4) by starting with a relieving cut underneath and finishing with a cross-cut on top.



Cutting from a lift bucket

The unit's long reach enables cutting to be performed next to the trunk without the risk of the lift bucket damaging other branches. The tool angle depends on the position of the branch.



5) OSHA / Safety Manual References:

Safety Manual: G1.10

Job briefing(s), including self briefing(s), shall be conducted for all jobs. The job briefing shall cover the work to be performed and a general plan for doing the job. The briefing shall cover hazards associated with the job, work procedures involved, specific assignments, energy source controls and personal protective equipment (PPE) requirements and be clearly understood by each worker. Anytime the scope of the work or the employees on a job changes, a new job briefing will be conducted.

Safety Manual: G1.23

Chain saw-resistant leg protection (chaps) shall be worn while operating a chain saw during ground operations.

Date Adopted: September 16, 2011