



**Transmission/Distribution  
Vegetation Management Program**



Flathead Electric Cooperative, Inc  
**Powerful Solutions**  
for our communities





# Vegetation Management Plan

## Flathead Electric Cooperative, Inc.

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# Vegetation Management Plan

Prepared by: Steve Quigley  
DIRECTOR OF RIGHT-OF-WAY

## I. Plan Overview

This Vegetation Management Plan will bring both the Transmission and Distribution systems of Flathead Electric Cooperative (FEC) into scheduled maintenance cycles. Cycle lengths will depend on average site conditions for the unit area, vegetation present, historical data or personal knowledge. The cycle length of a given unit must consider the safety of FEC employees, customers and the general public. FEC recognizes the special concerns relating to urban interface with forested land. As more people move to the draws and foothills around the valley, risks increase for property damage from fire. These risks will be considered when cycle lengths are determined. All pertinent governmental regulations must also be spelled out and satisfied. Flathead Electric's vision of providing reliable service at a reasonable cost is inherent to this plan. It is also understood that the plan will have the flexibility to deviate from scheduled work to attend to unscheduled (critical) hot spots as the need would arise.

## II. Professionalism and Aesthetics

Aesthetics and professionalism should be a major consideration on all projects. Employees are expected to produce a neat, aesthetically pleasing job, performed to modern standards and specifications. When an employee, contractor or contractor's employee, or subcontractor is approached by a landowner or any other member of the public with questions concerning the job, they should be addressed with courtesy and professionalism. If necessary, the person should be referred to the FEC Director of Right-of-Way.

## III. Vegetation Inventory and Tracking

Two options for developing a Vegetation Management Plan are 1) a **Map-grid System** in which a given service area is simply broken into units which are numbered or named and treated as a unit without regard to the power source, and 2) a **Feeder System**, in which a given substation feeder, is the basic plan unit, and would be completed in its entirety on a planned cycle. After considerable discussion with maintenance crews on both the tree trimmer and line sides, and their managers, it appears the Flathead area would be most efficiently served by the Feeder maintenance system. It seems to provide for the continuity necessary in converting to a scheduled maintenance cycle system. The primary tool to inventory and track our vegetation management will be the Vegetation Management Worksheet. This will be detailed later in this plan.

## IV. Mapping and Geographical Informational Systems (GIS)

FEC presently has (GIS) computerized mapping on their original lines, and the recently acquired PacifiCorp lines are presently being mapped and will be added to the system within 18 months. These systems contain a wealth of information that can be quickly accessed. It is a goal of this plan to place vegetation clearing information in the mapping system as it becomes available.

## V. Vegetation Management Goals

### Safety (suggestions)

- No lost-time accidents
- Reduce incident rates
- No OSHA citations
- No power line caused fires
- Correct climbable trees as identified

### Community Leadership and Involvement

Maintain active role in community forestry and right-of-way issues

### Customer Service - Inspect customer requests within 2 weeks

- Reduce tree-related outages by 10%
- Receive positive comments from customers/employees

### Costs and Efficiency

- Reduce costs per tree by 10% by:
  - Begin herbicide stump or basal treatments
  - Use mechanical mowing/trimming where possible
  - Competitive bids from qualified contractors for outlying areas
- Maintain tree removal percentage of 10%
- Reduce unscheduled work to 10% of total
  - Planned/scheduled work (90% of total work) based on plan developed by ROW Director  
(SEE ATTACHED)

## VI. Transmission Facilities

Flathead Electric's transmission system consists primarily of 34.5 kV lines originating at two company owned transmission substations, Lion Mountain and Trumble Creek, and BPA substations located at Columbia Falls, Kalispell and Montana Highway 35; feeding a network of 23 distribution substations between Libby and West Glacier. A 115 kV line connects the Troy BPA and Libby substations.

## VII. Distribution Facilities

Flathead Electric's distribution lines are defined as overhead facilities energized between 5.0 and 34.0 kV. There are 64 primary distribution feeder lines which are generally energized at 12.5 or 29.9 kV.

## VIII. Service Lines

Service lines, or drops, are defined as the conductor from FEC's poles to the customers' houses or businesses. These lines are generally energized at 240 volts. As with the original clearing of the line, the maintenance of the clearing is the responsibility of the customer. These lines are normally insulated, but may not be, and should be thought of as dangerous. A vegetation clearance of one to two feet should be maintained from these lines. Upon request, FEC will provide a serviceman to temporarily drop the service while the trimming is being done. In some cases of simple limb removal, the serviceman may elect to perform the trimming without assistance if it can be done safely. The customer should be aware of other service drops such as phone or TV cable when scheduling this removal.

## **Transmission/Distribution**

### **IX. New Construction Clearing Program**

Trees and vegetation will be cleared to required clearances for new construction of facilities. The new member or developer is responsible for the initial clearing of the right-of-way. It is very important that the initial clearing be done adequately, as clearing equipment may not be as readily accessible/available to these areas in the future. All trees should be trimmed, removed, or chemically treated per company specifications as they are listed in this document. Flathead Electric Cooperative Engineering and Right of Way management will coordinate these projects.

### **X. Scheduled Maintenance Cycle Program**

Trees and vegetation will be cleared from all Flathead Electric's facilities on a scheduled maintenance cycle program. The intent of the scheduled maintenance cycle program is to:

1. Identify and correct climbable trees and tree houses adjacent to facilities.
2. Identify and correct hazardous trees that could fall and contact facilities.
3. Trim all trees to obtain clearance that will last for the duration of the cycle.
4. Remove trees to provide clearance, improve access to facilities, and reduce future costs.
5. Make herbicide applications to improve access to facilities and to reduce future costs.
6. Establish a low growing plant community that stabilizes the site, inhibits the growth of tall growing trees, and provides habitat for wildlife.

Facilities will be worked in a systematic approach, by transmission line or distribution line feeders. All trees should be trimmed, removed, or chemically treated per company guidelines and/or specifications, as spelled out in the guidelines and/or specifications portions of this document.

### **XI. Vegetation Management Plan Worksheet**

All transmission lines and distribution feeders are listed in the Flathead Electric Cooperative Vegetation Management Plan Worksheet. This Excel spreadsheet lists cycle lengths, last treatment, next treatment as well as other pertinent information. It will serve as FEC's database and will have all the capabilities of sorting associated with the Excel database system. The spreadsheet will be updated monthly as more information is gathered or projects are completed. This will be a fast way of maintaining historical records, tracking costs and predicting future needs for budgeting purposes. It will be the primary tool for measuring FEC's success in tracking scheduled vs. unscheduled work, and whether the number of per feeder "cycle busters" are being reduced.

### **XII. "Cycle Busters"**

It must be understood that all facilities contain some fast growing "cycle busters" which will be tracked on the worksheet as well. It is Flathead Electric's goal to systematically reduce the number of cycle busters per line, via customer education, tree growth regulators and stump, stem or foliar applied herbicides. We will respond to non-cycle calls for trimming on these trees if they are deemed to be critical to public/employee safety or system protection. It is our goal to reduce this "unscheduled work" to less than ten percent of total work.

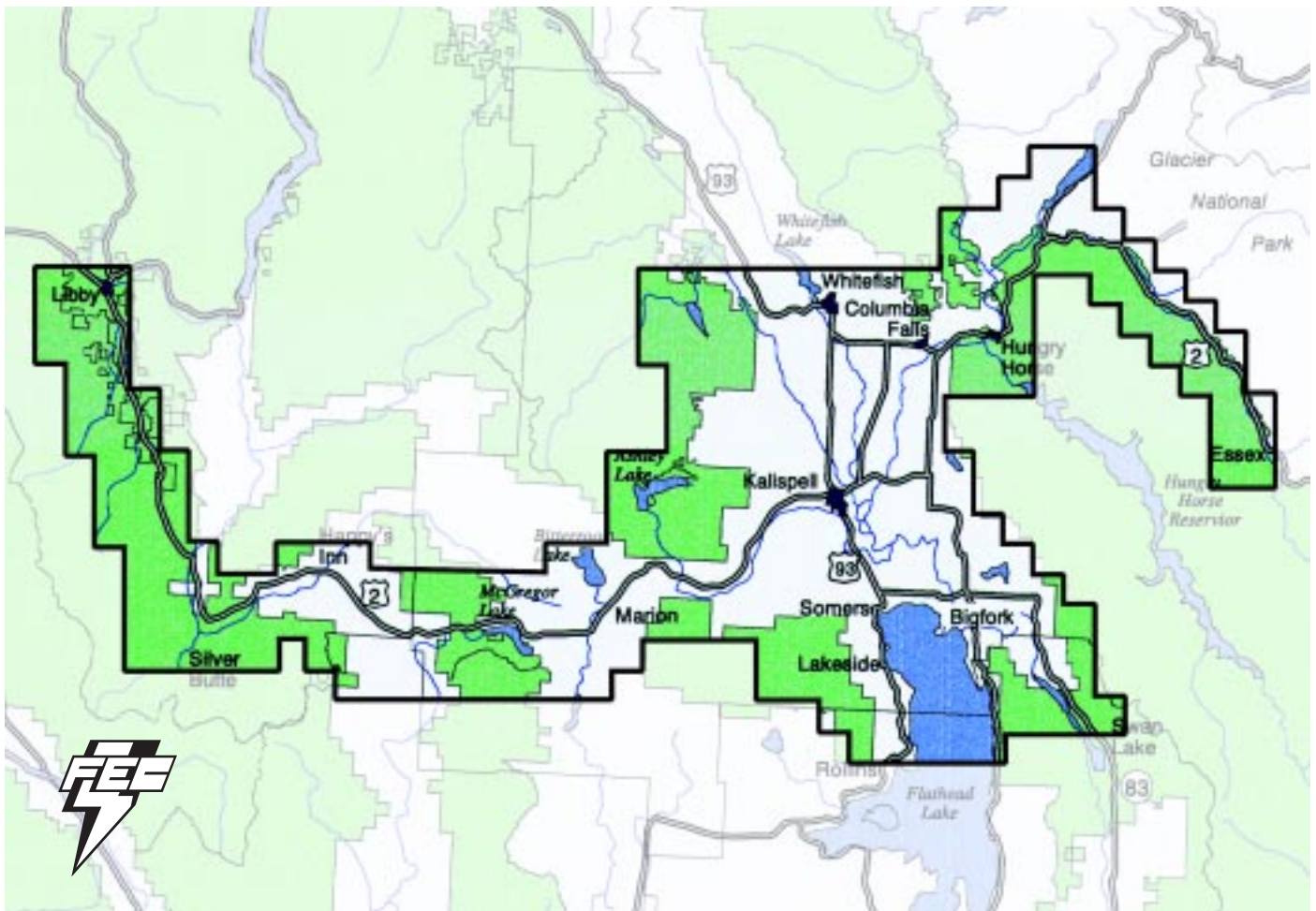


FEC's Right-of-Way crew chip brush and tree limbs from Swan Lake's Ranger District grounds.



The use of smaller equipment by FEC crews makes good sense when accessing difficult locations and minimizing impact to the area.

## Flathead Electric Cooperative's Service Territory



### **XIII. General Tree Trimming Guidelines**

**Low Growing Shrubs** - Shrubs which will not interfere with access, operation or maintenance of the line, shall be left undisturbed.

**Slash** - Slash may be chipped and blown on the right of way if so specified. If chipping is not possible due to terrain or other circumstances, the slash will be lopped and scattered on outer limits of right-of-way so that access for crews will not be inhibited. Standard fire hazard reduction practices will be employed, such as removing ladder fuels.

**Cutting Trees Outside the Right-of-Way** – Dead trees beyond the right-of-way which would strike the line in falling shall be removed. Leaning trees beyond the right-of-way which would strike the line in falling and which would require topping if not removed, shall either be removed or topped. The landowners permission shall be received prior to cutting trees outside of the right-of-way.

**Mowing** - Mechanical operations such as mowers or brushhogs, will be utilized where terrain permits, to most efficiently use our clearing budget, and reduce human exposure to hazardous conditions. The machines will be required to produce a clean, neat looking job.

**Pruning Standards and Practices** – All pruning practices will follow modern guidelines as published by the International Association of Arboriculture (ISA) standards unless a landowner makes a written request otherwise. Refer to ANSI A300 (1995), International Society of Arboriculture Tree Pruning Standards (1995), and Pruning Trees near Electric Utility Lines (Shigo-1990). Correct tree trimming should promote tree growth away from electrical conductors, provide longer periods of clearance, and reduce future work.

#### **Herbicide Specifications**

**1. General** - The use of herbicides is an integral part of FEC's Vegetation Management Program. Herbicide applications will be performed according to federal, state, and local regulations. Herbicide products will be used consistent with their labeling. The label is the law. Herbicide applications will be pursued as a vegetation management tool where possible. All herbicide products, mixes and applications must be approved by FEC's Director of Right of Way. All herbicide applications require written permission from the property owner. Applicators must use extreme caution when applying herbicides near water, adjacent properties with crops that might be damaged, or trees that might be root grafted to a treated stump. Again, the label will spell out these concerns and the applicator is responsible for them.

**2. Herbicide Applications** – The company making the application is responsible for the purchase, storage, record keeping and disposal of herbicides. Herbicides will only be applied by qualified applicators. Herbicide crews, tree crews, and mowing crews are required to have at least one individual on the crew at all times, who is qualified to apply herbicides. A qualified applicator is an individual who has been trained regarding the product and application method, and meets any federal, state, and local laws and regulations. This individual may be required to hold a certified applicators license, or be under the direct supervision of a certified applicator. This will depend upon state laws and regulations where the application is made. Supervisors of qualified applicators are required to hold a certified applicators license in the state or states in which they supervise crews.

**3. Herbicide Reports** – All herbicide applications whether by FEC employees or contractors will be reported to the FEC Director of Right-of-Way using the company’s herbicide report. Reports will be submitted to FEC on a weekly basis. It is the application company’s responsibility to maintain reports for review by the State Department of Agriculture.

**Tree Removal** - Tree removal is an important element of FEC’s Vegetation Management Program. Tree removal eliminates hazardous conditions, improves access to facilities, and reduces future work. Tree removals will be pursued wherever feasible.

#### **1. Tree Removal Candidates**

- a. Trees that are located at homes, schools, parks, and businesses, or other areas, which children may climb easily and contact primary conductors.
- b. Climbable trees or trees with tree houses that are close to primary conductors.
- c. Fast growing trees that may interfere with primary conductors before the next maintenance trimming. (see XIII.2.f, below for possible exception)
- d. Volunteer trees which will eventually interfere with primary conductors.
- e. Immature trees that are not presently interfering with primary conductors, but could at their mature height.
- f. Dead, dying, diseased, deformed and unstable trees which have a high probability of falling and contacting primary or secondary conductors.
- g. Trees that require extensive drop-crotch trimming.

#### **2. Tree Removal Conditions**

- a. Tree removals should be limited to ten feet either side of distribution conductors and within transmission rights of way, excluding danger trees.
- b. Danger trees (outside of the right of way) should only be removed if there is a threat of the tree or limbs falling and contacting the primary conductor and require landowner permission.
- c. Low growing compatible shrubs or trees whose mature height is less than 25 feet should not be removed. There will be situations where this type of vegetation should be removed for access to facilities or pole clearing requirements.
- d. Stumps shall be cut as close to the ground as practical in urban areas.
- e. All deciduous trees, brush, and vines that are removed may require stump treatment with an approved herbicide mix. Herbicide applications require signed permission from the property owner.
- f. Tree removal requires permission from the property owner. On distribution lines only, certain “landscape” trees may be left at landowners request, providing RW access is not impeded and the **landowner** agrees to keep the tree trimmed below the required under-clearance specification of 10’.

These requirements meet or exceed suggested state and federal guidelines for fire hazard control and will provide our line crews with the best possible access and safe, clear working conditions, and minimize tree related service interruptions to our members.

## Transmission Line (34.5 – 115 Kv)

### XIV. Tree Trimming Specifications/Clearances

The basic requirements for clearances around FEC’s transmission lines conductors are set forth in Table 1, below. Figures 2 and 3 on the following pages show a diagram of these clearances. These are minimum requirements at which time trimming will be necessary to allow for growth during the next cycle. The actual trimmed clearance should be at least five feet more than the minimum, to allow for growth.

**Table 1**

<b>TRANSMISSION LINE CLEARANCES</b>	
<b>Ground Clearance:</b>	15’ min. horizontally from center of right-of –way, both sides, <u>or to original dedicated right-of-way width</u> - 10’ around any structure (pole or tower).
<b>Side Clearance:</b>	115 kV line – 20 ft. from conductor 34.5 kV line – 10 ft. from conductor
<b>No overhang will be allowed on transmission lines. See Figure 2 &amp; 3 for undergrowth restrictions.</b>	

### XV. Distribution Line - Tree Trimming Specifications/Clearances

The basic required clearances for FEC’s distribution lines are set forth in Table 2, below. Figure 1 shows a diagram of the clearances. These are minimum requirements. An extra five feet should be trimmed to allow for growth during the next cycle.

**Table 2**

<b>DISTRIBUTION LINE CLEARANCES</b>	
<b>Ground Clearance:</b>	10’ horizontally from center of right-of –way, both sides 10’ around any structure (pole)
<b>Side Clearance:</b>	8’ from conductor - side clearance exception in special cases, down to 3’ from main stem for large diameter trees (>20” diameter breast height) if they appear sound or 5’ in mature, timbered stands where limb growth will not be a problem.
<b>Overhang Clearance:</b>	10’ - Overhang will only be an option in special situations. It will be allowed on large diameter trees (trees >20” diameter breast height) which are sound .
<b>Underclearance:</b>	14’ (underclearance will only be an option in special situations at property owner’s written request, and will only be considered on large diameter trees (>20” diameter breast height) that are sound and that the property owner doesn’t want removed, or certain “landscape” trees as defined in Section XIII.2.f above (see Figure 3).

### XVI. Structure Clearance

On both transmission and distribution line structures (poles and towers) a minimum 10’ clearing is required the full circumference of the structure. Also, all flammable material should be removed below 8 ft. high.

### XVII. General Specifications

#### Safety

Federal and State OSHA requirements that apply to vegetation management activities shall be followed at all times. Refer to ANSI Z133.1-1994 and Federal OSHA 1910.269. Tree workers, equipment operators, and

ground men shall use personal protective equipment such as hard hats, safety glasses, ear plugs, and chain saw leg protectors. Activities shall be conducted in a manner that protects crew and public safety. Crews shall have radio or telephone communication on the job site at all times. Contractors or sub-contractors are also required to follow the above rules.

### **Fire Protection**

During the fire season, federal agencies and State Departments of Forestry require crews to have training and equipment necessary for fire protection. Federal, State and local fire protection laws and regulations shall be followed, and any permits necessary will be obtained by the company or contractor performing the work.

### **Threatened and Endangered Species, Nesting Seasons**

Work shall be performed in a manner that does not disturb or harm any rare, threatened, endangered, or protected plant or animal species. This includes adhering to nesting season restrictions. Prior to commencing work on federal and state lands, FEC will contact the agency to determine if such species are present on right-of-ways. If present, they will be identified in the field by FEC or the agency. On such sites, measures will be taken to minimize disturbance by employees or contractors as is recommended by the agency.

### **Archaeological Sites**

Work shall be performed in a manner that does not disturb a known archaeological site. Prior to commencing work on federal and state lands, FEC will contact the agency to determine if such sites are present on right-of-ways. If present, they shall be identified in the field by FEC or the agency. On such sites, all tree and brush work will be performed so as to minimize ground disturbance. If archaeological artifacts are located on private lands, before or after work is started, work shall immediately halt, and findings reported to FEC. Field data inventories of known sites may be on file in FEC Right-of-Way offices. Road construction or grading shall not be performed without permission from FEC.

### **Hydroelectric Facilities**

FEC hydroelectric facilities and right-of-ways adjacent to facilities may have restrictions on vegetation management activities. FEC's Director of Right-of-Way should be contacted before activities begin.

### **Wetlands, Stream Protection**

Wetlands are sites that have standing water, hydric soils, and plants that are unique to the site. Wetlands and stream crossings shall be worked by hand or during frozen conditions with proper agency permission. Water pollution shall be prevented and soil or debris shall not be placed in streams in a manner that would obstruct or impair the flow of water. Machine work shall not be performed in wetland sites or within fifty feet of a live stream unless a permit has been obtained from the proper regulatory agency. In most cases this would be the Soil Conservation Service.

### **Fences and Gates**

Gates should be left open or closed as they were found, or as the property owner wishes. Damage to fences or gates shall be reported to the property owner and FEC and be repaired as soon as possible.

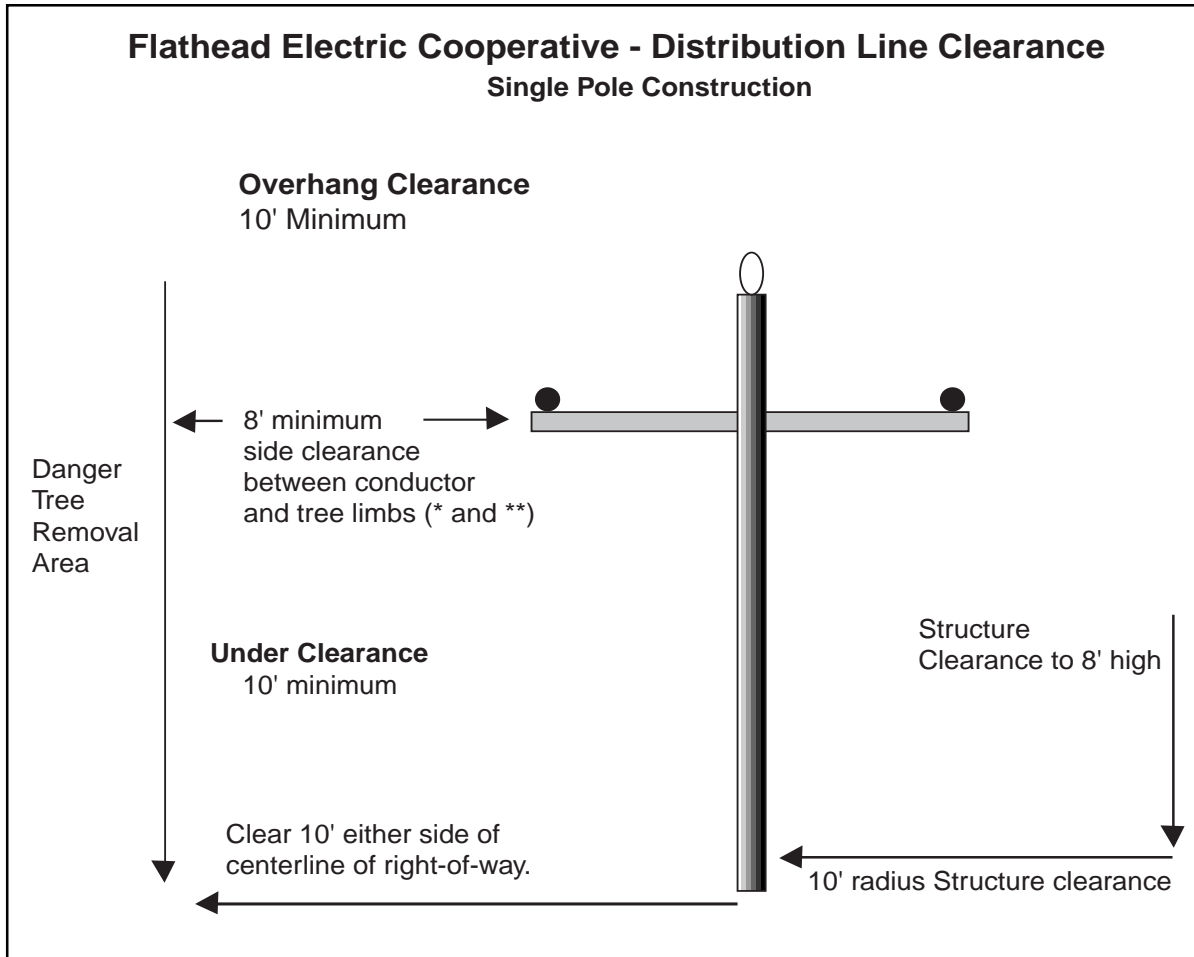
### **Survey Markers**

Work shall be performed in a manner that does not damage witness trees, survey markers, monuments, or property corners. If damage occurs, the property owner and FEC, shall be contacted.

## XVIII. Standards

The Standards published by the American National Standards Institute (ANSI) ANSI A300-1995 for “Tree, Shrub and Other Woody Plant Maintenance”, and ANSI Z133.1-1994 “Pruning, Trimming, Repairing, Maintaining, and Removing Trees, and Cutting Brush – Safety Requirements” will be adhered to by employees and contractors and are attached to this document.

**Figure 1**



### **Overhang Clearance**

A ten (10') foot overhang will only be an option in special situations at the property owner's request, and will only be considered on large diameter trees (trees larger than 20" diameter breast height) that are sound and the property owner doesn't want the tree cut.

### **\*Side Clearance**

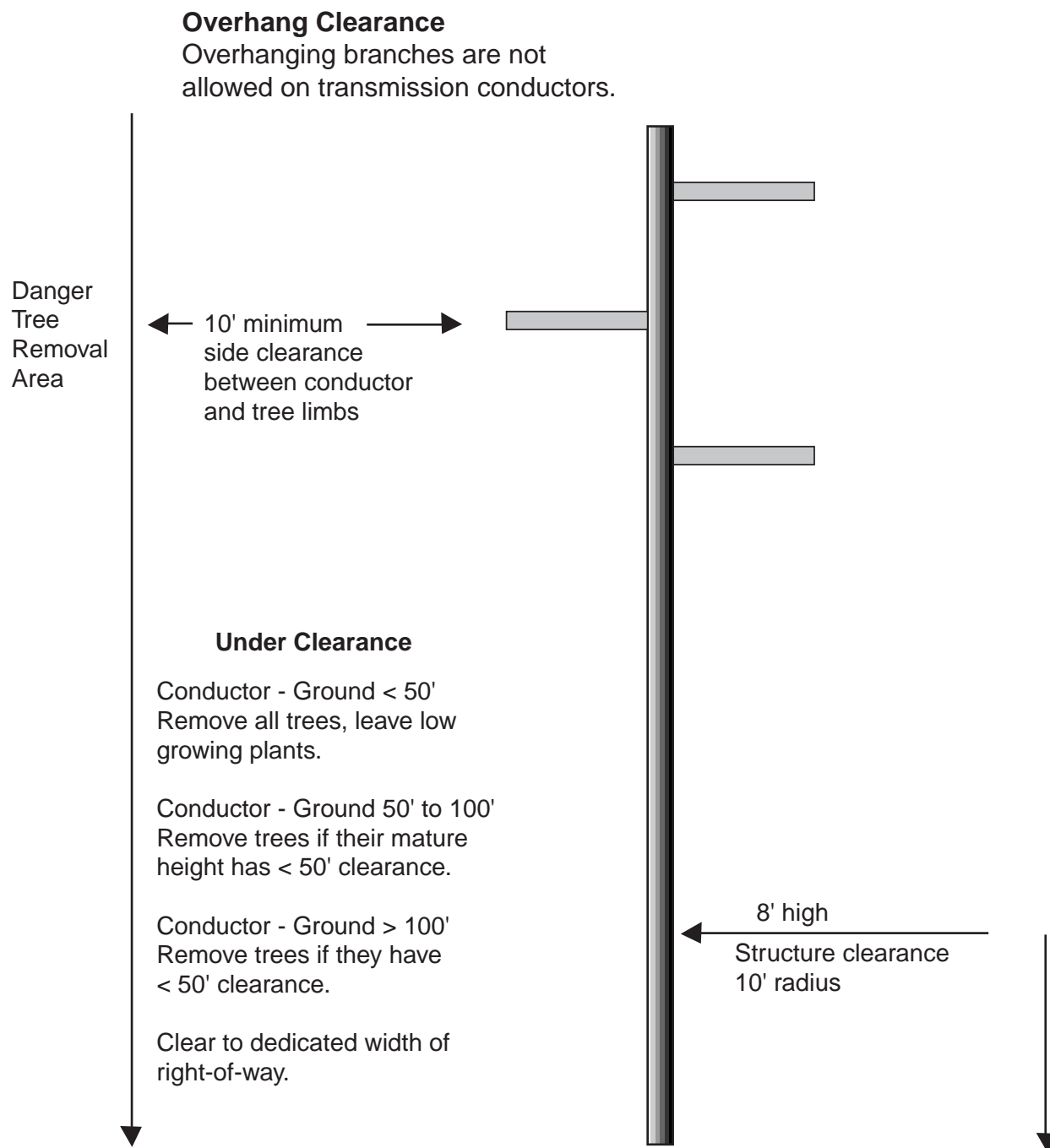
Side clearance down to 3' will be allowed on large diameter trees (>20" diameter at breast height) if they are sound and not leaning toward the line.

### **\*\*Side Clearance**

Side clearance down to 5' will be allowed in mature stands of timber if limb growth will not be a problem.

**Figure 2**

**Flathead Electric Cooperative - 34.5 kV Transmission Line Clearance  
Single Pole Construction**

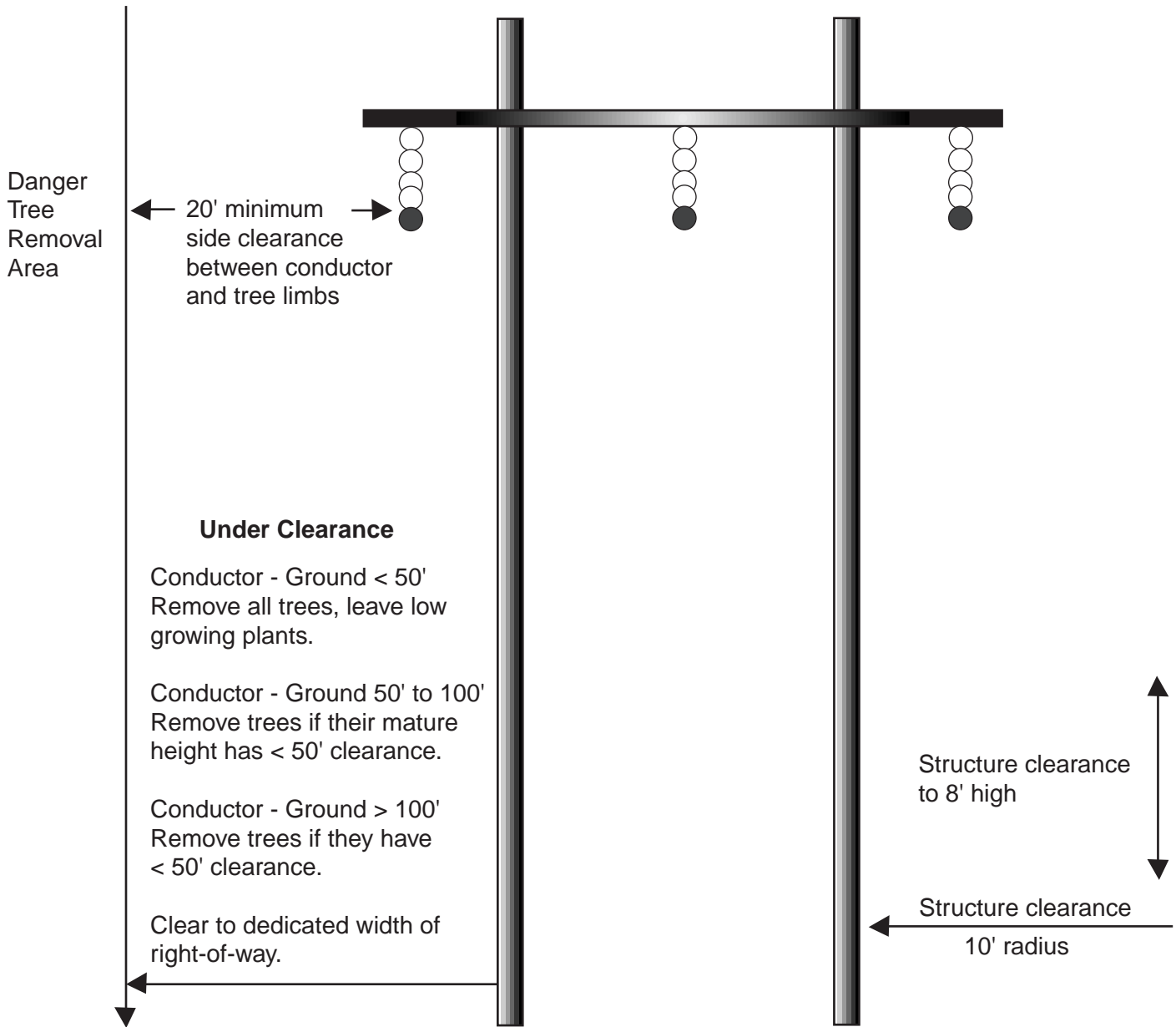


**Figure 3**

**Flathead Electric Cooperative - 115 kV Transmission Line Clearance  
Two Pole Construction**

**Overhang Clearance**

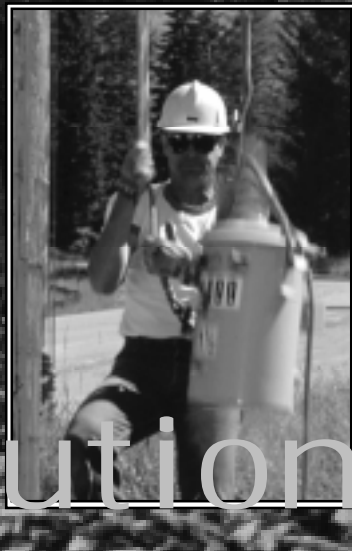
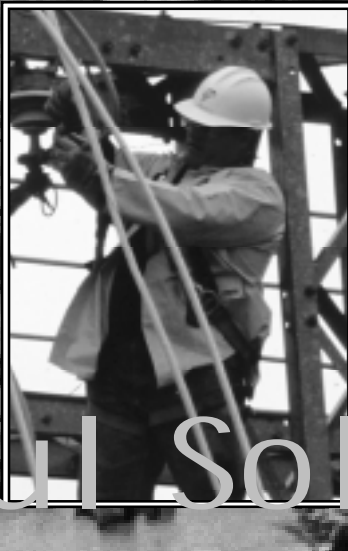
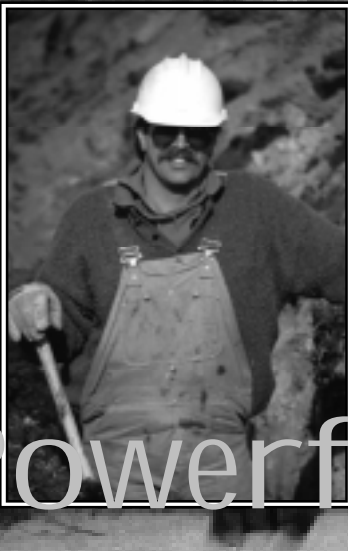
Overhanging branches are not allowed on transmission conductors.







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