Empire District Electric

Vegetation Policies,
Plans & Procedures

SERVICES YOU COUNT ON

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Empire District Electric Company

602 S. Joplin Ave., Joplin, MO 64802

Introduction to Empire District's Vegetation Policies, Plans & Procedures

The Empire District Electric Company developed the following polices, plans & procedures with the primary goal of providing long-term capacity, energy, transmission, and efficiency solutions while maintaining competitive rates. One of the key objectives of the policy is to increase the overall reliability of the electric system.

Empire operates in Missouri, Kansas, Oklahoma and Arkansas. The Company is divided in two districts for operations – Eastern & Western and each district has four service areas. All four states in which we operate have rules concerning vegetation management. Empire's plan is designed to comply with the rules of all four states.

The Missouri Public Service Commission enacted their rules on July 1, 2008. The vegetation management plans for the state of Missouri require completion of a four-year or six-year cycle through the entire system by June 30 of the year ending the cycle. The schedules included in this plan are designed to show at least one full cycle through the system. The schedules include a classification of each circuit based upon the number of customers per circuit mile.

Vegetation Summary

The vegetation plans for the distribution system are designed to maintain a consistent number of miles across the system and in each of Empires eight service areas. Each circuit was evaluated based upon previous vegetation related outages, local area manager's knowledge and the length of time since previously maintained. The goal was to distribute the work load across each of Empire's eight service areas, while maintaining consistent miles on the Eastern and Western sections of the Company to accommodate the tree trimming crews. By keeping the miles consistent across the system and the service area, the tree trimming crews will be able to maintain approximate size and miles driven to the job site each year, ultimately allowing the tree trimming contractor to maintain local, trained and quality personnel and to provide Empire with the lowest cost solution.

The vegetation plan for the transmission system also maintains a consistent number of miles across the system each year. Each segment of the transmission system was evaluated based upon previous vegetation history, the knowledge of Empire's vegetation manager and the length of time since previously maintained. Similar to the distribution

goals, the objective was to maintain a consistent number of miles per year to accommodate the tree trimming crews.

The vegetation plan includes a primary cycle schedule and a mid-cycle schedule. The primary cycle refers to when vegetation is to be trimmed in accordance with the Distribution System Vegetation Management Policy or the Transmission System Vegetation Management Policy. The mid-cycle schedule is a visual inspection of the circuit looking for hazardous vegetation that may cause an outage before the next primary cycle.

Section 1.1

Distribution System

Section 1.1.1

Policy & Procedure Manual

EMPIRE DISTRICT ELECTRIC COMPANY

DISTRIBUTION SYSTEM VEGETATION MANAGEMENT POLICY AND PROCEDURES MANUAL

June 6, 2007 **Amended by**
Scott Mackey and Celwyn West

These policies and procedures apply to all overhead Empire District Electric Company distribution power lines, from 120V to 25kV.

It is important for all Empire District Electric Company employees involved with the vegetation management program to understand and support these policies and procedures.

This manual supersedes all previous manuals, specifications and guidelines for line clearance and vegetation management work at Empire District Electric Company
March 2005

Safety Policy

Section 1.0

All crews performing vegetation management work on or near Empire District Electric Company facilities or rights-of-way shall follow approved safety guidelines and procedures. All contractors performing work for Empire District Electric Company shall comply with all applicable governmental safety and health regulations and the safety and health provisions of their contract.

All contractors also must, at all times, be aware of the nature and characteristics of Empire District Electric Company electric facilities before work begins. Contractors need to understand that electric facilities must remain energized during the performance of work unless special arrangements are made with an authorized Empire District Electric Company representative.

The following procedures pertain to contractors performing vegetation management work for Empire District Electric Company:

- The contractor shall obtain from Empire District Electric Company full information as to the voltage of its circuits before starting the work.
- The contractor shall at all times conduct work in a manner to safeguard the public from injury and property from damage.
- The contractor must use all necessary protection for its employees and the public and guard against interference with normal operation of the circuits. If, in the judgment of the contractor's general foreman/supervisor, it is hazardous to prune or remove trees with the circuits energized, the contractor must contact an authorized Empire District Electric Company representative(s). If appropriate, Empire District Electric Company will provide the necessary protective materials or de-energize circuits to ensure the safe pruning or removal of the tree(s).
- Should the contractor knock down or come into contact with Empire District Electric Company conductors (power lines), the contractor must notify Empire District Electric Company immediately and take the necessary protective measures. All contractor-caused electric service interruptions are subject to repair at the contractor's expense. This would include any damage to customers' property, including any electrical damage.
- In the event a contractor becomes aware of any dangerous, broken, loose or faulty Empire District Electric Company line facilities in the normal course of its line clearance performance, the contractor shall promptly advise Empire District Electric Company as to the exact pole location(s) and nature of the condition found.

General Guidelines

Section 2.0

2.1 – EXPLANATIONS OF TERMS AND METHODS

2.1.1 Qualified Line Clearance Tree Trimmer:
Personnel who meet the qualifications of "line clearance tree trimmer and/or trimmer trainee" as defined by OSHA 1910.269, ANSI Z133.1 and any other applicable federal, state or local, laws, codes, or regulations.

2.1.2 Distribution (<=25kV) Pruning Cycle:
Empire District Electric Company uses a scheduled pruning cycle to prune trees on lines in rural and urban areas. The company will schedule certain critical feeder lines as often as necessary to ensure its reliability.

2.1.3 Trimming Around Primary and Secondary Lines:
Empire District Electric Company will identify and schedule for maintenance, any trees that are a hazard or potential hazard to the supply or reliability of primary or secondary power lines. Qualified line clearance tree trimmers under direction of Empire District Electric Company or its agents are to perform selective tree-branch removal to prevent or correct hazardous situations that may result in outages or endanger life or property. They are to make field judgment as to what amount of clearance is necessary to obtain reliability. They are to look for obvious situations such as deflected wires, branches rubbing insulated wires and broken or hanging tree branches.

2.1.4 Pole-to-House and Street Light Service Lines:
Pole-to-house and street light service lines should only be pruned if a branch is significantly pushing against or is lying on the wire.

2.1.5 General Guidelines for Tree/Conductor Clearance:
The exact amount of clearance needed to maintain reliability depends on the type of tree, its location and condition, and the type of power line and its voltage, as well as many other factors. Empire District Electric Company and its contractors will consider all factors when deciding how much clearance is necessary.

Empire District Electric Company and its contractors will use their professional judgment in determining what these clearances will be in each situation, based on the proposed maintenance cycle for the area in which they are working. The maintenance cycle is dependent upon electric reliability requirements of the system.

2.1.6 Circuit Prioritization and Scheduling:
During a year, circuits are prioritized based on the following factors:

- Reliability – The circuits due to be trimmed for any given year are ranked based on customer minutes interrupted by tree-related causes. Circuits that have the highest number of customer minutes interrupted by tree growth outages are scheduled first.
- Last Trim Date – Circuits are scheduled based on the last trim date. The oldest are weighted over the earliest.
- Customers Affected – Circuits are ranked by customer count. Circuits with high numbers of customers or circuits with critical customers are ranked higher.
- Current Vegetation Conditions – The current vegetation conditions on a circuit will be used to prioritize it. Customer requests for tree trimming are also taken in to consideration when determining the current vegetation conditions of a circuit.
- Other – Other factors that are considered when scheduling are circuit load, customer complaints and political issues.

Circuits are first scored based on reliability data, last trim date and the current vegetation conditions. Then other factors are considered to refine the rankings. Prioritization of a circuit may change based on any of these factors. For scheduling strategy, see Appendix 4.

2.1.7 Pruning

Tree pruning is the selective removal of branches that are not an adequate distance from the power lines, or that will grow too close to the power lines within the next maintenance cycle.

Trees are pruned to provide adequate clearance from Empire District Electric Company facilities. As a general rule, trees should be pruned to improve or re-establish the clearance provided from all previous tree maintenance performed.

Some factors to consider before pruning include:

- The growth rate of the tree species (how fast the branches grow back);
- The wood strength of the tree species (what is the chance of the branch breaking under the load of strong wind, snow, or ice);
- The voltage conducted by the line (the hazard presented by the branch contacting the line; the higher the voltage, the greater the hazard);
- Tree removal considerations. In some cases, it may be preferable to remove the tree. For example, when repeated severe pruning is necessary or when the tree is declining and unsafe;
- Limbs overhanging Empire District Electric Company facilities. Remove or shorten dangerous limbs – those overhanging limbs with a high potential for breaking or bending into Empire District Electric Company conductors due to ice, snow or wind loading (be aware of included bark at the branch bark ridge);
- ANSI-A300 procedures and techniques will be followed

2.1.8 – Manual/Mechanical Removal of Vegetation

2.1.8.1 -- Removal Considerations for trees where ownership can be determined

- Remove all tall-growing trees within the width of the right-of-way.
- Remove all tall-growing brush that has the potential to grow closer than the minimum clearance specified for a specific voltage line.
- Remove all brush and vines around poles and other EMPIRE equipment.
- All trees and brush should be cut as close to the ground as practical.
- Remove all fast-growing and undesirable tree species.
- Remove all second growth from stumps cut on previous pruning cycles.
- Remove all trees that present an obvious or potential hazard to Empire District Electric Company facilities.

2.1.8.2 -- Removal Considerations for trees where ownership cannot be determined and are either 4”-10.9” DBH trees with original crown or Trees that have been topped or otherwise improperly pruned as defined by ANSI A-300 (Part 1)-2001 Pruning

- All considerations on section 2.1.8.1.
- Unmarketable fencerow trees that currently lack ability to be beneficial shade.
- Trees located in such a manner that ANSI A-300 (Part 1)-2001 Pruning cannot be followed while attaining clearances set in this documents Appendix 2
- Edge trees of no market value that yield no additional benefit due to adjacent or otherwise available shade to livestock.
- Trees located in areas not manicured, accessible and inaccessible alleys in town, or not associated with a residence.

Stumps should be treated with herbicide to prevent re-sprouting.

2.1.9. Hazard Trees

Trees that are located beyond the edge of the right-of-way, have a high probability of failure and are of sufficient height to contact the conductors and/or structures and guy wires, if they were to fall in that direction, are classified as danger trees, and should be considered for removal.

Conditions could include but are not limited to the following:
Dead or dying
Leaning trees
Weak branches
Shallow root system
Root failure
Internal decay
Canker or canker root

2.1.10 – Right-of-way Screens

Right-of-way screens are strips or areas of trees and brush purposely left on the right-of-way in certain areas where it is required by federal, state and/or local laws or regulations and/or it is desirable to reduce the visual impact of the cleared right-of-way to the general public. Along certain roads and other areas frequented by the public, screens of trees may be left on the right-of-way so the natural tree line is not interrupted by the cleared right-of-way, and to reduce the "corridor" appearance of a cleared right-of-way. Screens should be composed of low-growing trees and shrubs that will not normally grow to conductor height.

2.2 - EMPIRE DISTRICT ELECTRIC COMPANY SCHEDULED TREE PRUNING

2.2.1 Procedure

Empire District Electric Company or its agents will inspect trees near power lines scheduled for pruning and determine which trees should be pruned or removed. Attempts will be made to notify homeowners or residents before pruning is done.

2.2.2 Limb and Branch Disposal

Empire District Electric Company/Empire District Electric Company contract crews will dispose of all debris resulting from their tree and pruning operations that are small enough to be fed through a chipper unless different arrangements have been made with the homeowner or resident. With Permissions wood too large to be chipped shall be cut and stacked at the site.

2.2.3 Brush Removal

Brush is defined as a tall-growing tree stem that is less then 4 inches in diameter at breast height. Brush should normally be removed rather than pruned.

2.3 - EMPIRE DISTRICT ELECTRIC COMPANY SCHEDULED TREE REMOVAL

2.3.1 Removal Procedure

Empire District Electric Company and its agents will inspect the trees near power lines scheduled for maintenance and determine which trees should be removed. If a tree is a candidate for removal, the homeowner or resident will be contacted and asked to authorize Empire District Electric Company and its contractors to remove the tree as low to the ground line as possible (See Section 2.1.0, Customer Contact).

2.3.2 Tree Disposal

Empire District Electric Company/Empire District Electric Company contract crews will dispose of all debris small enough to feed through a chipper resulting from their tree removal and pruning operations unless different arrangements have been made with the homeowner or resident. Wood too large to be chipped shall be cut and stacked at the site unless the homeowner requests the wood be removed.

2.3.3 Stumps

Empire District Electric Company and its contract crews will NOT grind out stumps, unless special arrangements have been agreed upon. All stumps shall be treated with an approved herbicide unless a property owner has requested that the stump not be treated or if the herbicide label warns against treatment of stumps in particular situations.

2.4 – CUSTOMER REQUESTED TREE PRUNING POLICY

Empire District Electric Company will promptly respond to customer requests related to tree/right-of-way maintenance, assign a priority level for scheduling and inform the property owner of the results of the investigation.

Empire District Electric Company Utilities should follow the following guidelines:

- Document all request using a standard Customer Request Form.
- Screen all request by phone by asking questions such as:
    - Do you have power?
    - Do your lights blink?

- Field inspect the request that cannot be resolved by phone and ask the same questions as above. If no one is home when the field inspection occurs, provide door-hanger that notifies customer of the decision that was made and if the work will be completed, deferred or denied. This practice can increase efficiency for field investigations that are completed when property owners are not at home.

2.4.1 Procedure

When a customer requests Empire District Electric Company to prune a tree away from pole-to-pole lines, the company will send out a representative to make a determination of any potential hazards that exist.

If it is determined that a potential hazard does exist, Empire District Electric Company will schedule a crew to perform all necessary pruning and/or removal.

If the tree is not a potential hazard, Empire District Electric Company will inform the customer that the tree will be re-evaluated when that particular area is scheduled for maintenance.

2.4.2 Limb and Branch Disposal

If it is determined that a potential hazard does exist, Empire District Electric Company/Empire District Electric Company contract crews will dispose of all debris small enough to feed through a chipper resulting from their tree removal and pruning operations unless different arrangements have been made with the homeowner or resident. With permission, wood too large to be chipped shall be cut and stacked at the site.

2.5 – CUSTOMER TREE REMOVAL

2.5.1 Procedure

When a customer wants to remove a tree and Empire District Electric Company's facilities make it hazardous for the customer or customer's agent to accomplish the work, Empire District Electric Company will do one of the following:

- Temporarily drop the conductors while the customer or customer's agent performs the work. To make arrangements, call the Empire District Electric Company Customer Service Center at (800) 206-2300
- Prune or remove the portion of the tree that is contributing to the hazard.
- A Empire District representative will inspect the request within five working days

Note: Empire District Electric Company will not remove trees to clear house (pole–to-house), or street light service lines.

2.5.2 Tree Disposal

When Empire District Electric Company prunes or removes trees at the customers' request, the disposal of the debris is the responsibility of the property owner unless otherwise agreed to in writing.

2.6 –CUSTOMER PRUNING WITH EMPIRE DISTRICT ELECTRIC COMPANY ASSISTANCE

2.6.1 Procedure

When a customer desires to prune a tree close to Empire District Electric Company lines for reasons other than line clearance, and it is hazardous to complete the work, Empire District Electric Company will do one of the following after customer notification:
Temporarily drop the conductors while the customer or customer's agent performs the work. To make arrangements, call the Empire District Electric Company Customer Service Center.
Prune or remove the portion of the tree that is creating the hazard.

Note: In all cases, the decision on which course of action to take will be determined by a Empire District Electric Company representative after consultation with the customer.

2.6.2 Limb and Branch Disposal

When Empire District Electric Company assists the customer to prunes or removes trees at a customer's request, the disposal of the debris is the responsibility of the property owner unless otherwise agreed to in writing.

2.7 – CUSTOMER PRUNING NEAR EMPIRE DISTRICT ELECTRIC COMPANY FACILITIES

2.7.1 Procedure

When a customer desires to prune trees near Empire District Electric Company lines, the following conditions must be met:

Only qualified line-clearance tree trimmers and/or trimmer trainees are allowed within 10 feet of any energized conductors (OSHA 1910.269 and ANSI ZI33.1 and any other applicable federal, state or local laws, codes or regulations). Qualified line-clearance tree trimmers will do all pruning around Empire District Electric Company facilities.

Empire District Electric Company must be notified in advance of the customer's agent performing the work.

2.7.2 Limb and Branch Disposal

Clean up and disposal of all limbs, branches and debris resulting from this clearing operation are the responsibility of the property owner.

2.8 – TREE PRUNING AND REMOVAL DURING STORMS

2.8.1 Procedure

When trees fail or branches break during storms, and they make contact with or cause failure of Empire District Electric Company facilities, Empire District Electric Company will do the necessary pruning or removal to clear its facilities and restore power.

Note: Due to the emergency conditions that exist during storms, Empire District Electric Company and its contract crews may not be able to contact all customers before pruning or cutting trees. Crews may make a courtesy knock on the customer's door to let them know that work will be performed at that location.

2.8.2 Disposal

If Empire District Electric Company and its contract crews prune or remove trees following storm emergencies, all limbs and logs will be left on the customer's premises. The disposal of limbs and/or logs is the responsibility of the property owner.

2.9 – PRUNING AND REMOVAL OF DISEASED TREES

2.9.1 Pruning

Where trees are encountered that are suspected of being diseased (Dutch elm disease, oak wilt, etc.) the customer should be notified and a determination made as to whether the tree should be pruned. If the customer is not willing to agree the tree is diseased, Empire District Electric Company will refrain temporarily from pruning the tree, if possible, until

symptoms are more visible or the hazard is too great. Contract crews should report the matter to their supervisor.

2.9.2 Removal

When diseased trees are near Empire District Electric Company lines, Empire District Electric Company and its contract crews will do one of the following:
Prune the trees to clear Empire District Electric Company facilities;
Temporarily drop the conductors while the customer or customer's agent removes the tree. For a temporary line drop, customers should contact Empire District Electric Company Customer Service Center.

2.9.3 Disposal

Should a tree be condemned by a municipal jurisdiction as having Dutch elm disease, oak wilt or another tree disorder, Empire District Electric Company has no responsibility for the removal or disposal of the tree except when the tree is located on property owned by Empire District Electric Company. Removal and disposal of diseased trees is the responsibility of the property owner.

2.10 – CUSTOMER CONTACT POLICY

2.10.1 – Scheduled Pruning/Removal

An Empire District Electric Company agent or Empire District Electric Company representative will attempt to contact each customer/homeowner whenever possible before pruning any trees or in accordance with any pending special conditions mandated by an appropriate regulatory body.

For normal pruning:
An Empire District Electric Company representative or agent will knock on the door to talk with the homeowner and explain the necessary pruning. If no one is home, a notice will be left on the door.

If the homeowner does not contact Empire District Electric Company, the contract trimming crew will to do the necessary pruning. Before starting the line clearance work, the contract trimming crew will attempt a courtesy contact with the property owner by knocking on the door.

If the pruning is necessary and the homeowner refuses permission, the crew will turn the matter over to the work planner. If the planner is unable to develop concurrence with the customer regarding the necessary pruning, the planner will notify appropriate Empire District Electric Company representative.

Pruning on public property:
When pruning involves trees on public property or rights-of-way, it is recommended that the Empire District Electric Company representative or agent contact the appropriate public agency to discuss any special concerns. (Example: Contact a city forester or parks department before pruning boulevard trees). It is the line clearance trimming contractor's responsibility to acquire any licensing required by municipalities for the pruning of trees.

For tree removal:
Before removing a tree, homeowners will be contacted and informed of the necessary work. Empire District Electric Company representative or agent will secure a signed permit before starting the work unless otherwise approved by Empire District Electric Company. When property ownership cannot be determined the approved agents assigned by EDE will be allowed to authorize by signature removal of trees defined in section 2.1.8.2 for that site to the utility line clearance contractor.

2.10.2 – Customer-Requested Pruning/Removal
Emergency and hazardous conditions will be addressed immediately.
If the pruning has been agreed to over the phone, (for normal pruning) the crew will make a courtesy knock on the door before starting the work.
If the work requires written permission (tree removal), the crew will follow the same procedure as outlined for scheduled work.

2.10.3 – Storm Work
Due to emergency conditions that occur during a storm, Empire District Electric Company and its contractors will prune and remove trees necessary to restore power without contacting every homeowner.

A courtesy knock will be made at each customer site to inform them of the work being done, however, *the work will proceed even if the customer is not home.*

Herbicide Use Policy (Distribution)

Section 3.0

3.1 – SAFETY AND REGULATIONS

All herbicides shall be applied in strict compliance with all federal, state and local laws and regulations. This includes, but is not limited to: transporting, handling and chemical container disposal.

All herbicide and treatment methods used by the contractor shall have prior approval by Empire District Electric Company.

Any crewmember applying herbicides must be supplied with the appropriate protective gear, current label and Material Safety Data Sheet (MSDS) for the product being applied. It is the contractor's responsibility to provide all necessary materials, including chemicals and safety gear, unless specifically indicated as being provided by Empire District Electric Company.

The contractor is responsible for the proper disposal or recycling of all herbicide containers.

A reasonable attempt to notify homeowners adjacent to the application area of necessary work should be made by the contractor performing the applications. An Empire District Electric Company representative or agent may attempt to contact homeowners before starting the work when ownership can be determined during planning. If ownership cannot be determined without property research work will be performed as planned.

3.2 – APPLICATION OF HERBICIDE

3.2.1 Requirements and Precautions

- Do not apply herbicides outside the easement right-of-way boundaries except in cases where no right-of-way width has been established in the easement.
- All herbicide treatment shall be performed in a responsible manner that will reflect the best interests of the property owner and Empire District Electric Company. If a property owner should object to any of the herbicide treatments, the operation shall immediately be discontinued on that property until any differences are resolved.
- Cut off all vines ascending all poles and guy wires at the height of reach.
- Herbicide may be applied to foliage of brush under 10 feet tall.
- Herbicide may be applied to foliage of trees over 10 feet tall as approved and directed by the assigned Empire District Electric Co. employee or representing agent.
- The Contractor shall furnish all mixing materials and application equipment and shall be responsible for transporting, handling, mixing, and application of chemicals used in the immediate operation unless other wise directed by the Manager of Vegetation Control.

- The Contractor shall comply with all State and Federal Laws and Regulations pertaining to Herbicide Applications and any other licensing or regulatory requirements.
- The Contractor shall only use herbicide solutions that contain dye according to label recommendations for basal and stump applications.
- The Contractor shall guarantee a minimum ninety percent (90%) stump control per span, as determined during the growing season following the treatment. Spans not meeting these specifications shall be re-treated by the Contractor at the Contractor's expense to achieve the proper mortality. The Contractor shall guarantee a minimum of ninety-five percent (95%) mortality of brush stems per span for all foliage or basal applications. Mortality must be achieved within two hundred seventy (270) days following treatment. Spans not meeting these specifications shall be retreated at the Contractor's expense to achieve the proper mortality.

In chemical application work, the Contractor shall have the right to skip any portion of a line when, in the opinion of the Contractor, damage to crops, orchards, or ornamental plantings may result from drift. Any skips shall be reported to the appropriate inspector or supervisor.

3.3 – REPORTING PESTICIDE INCIDENTS

When a spill is reported the contractor general foreman should determine the type of chemical and amount of spillage along with the containment efforts that were made. Then the general foreman should notify the proper state or federal agencies if necessary. Any spill, leak, fire or other accident involving pesticides *must be reported immediately* to the proper line clearance supervisor. All damage from such leaks or spills are the responsibility of the contractor.

Tree Replacement

Section 4.0

4.1 – GENERAL GUIDELINES
It may be preferable to remove and replace certain trees that pose a particular hazard to the power lines. Fast-growing, tall trees directly under primary wires are an example. They grow back quickly into the wires and can cause repeated outages. Poplars, elms, willows and silver maples are some fast-growing trees that need frequent pruning near power lines.

Communities
Empire District Electric Company will cooperate with communities in applying for tree-planting grants from the state and federal government. Empire District Electric Company may provide funds to purchase trees, or labor to remove existing trees, or both depending on the circumstances.

Property Owners
Empire District Electric Company works with homeowners to identify trees that are good candidates for replacement. The tree must be near Empire District Electric Company power lines and must require repeated pruning to keep the lines clear. The power line must be at least a primary circuit. Empire District Electric Company will remove the existing tree and provide assistance in replacing the tree. The planting and care of the new tree is the responsibility of the property owner.

Empire District Electric Company reserves the right to decide under what circumstances trees will be replaced (at the expense of Empire District Electric Company). The replacement tree must be a low-growing variety, or it must be planted a sufficient distance away from power lines as to not require future line clearance pruning, if it is a tall-growing variety.

Appendices

1. Table 1: Major Tree Species and Growth Rates
2. Table 2: Guideline for Line Clearances
3. Table 3: Annual Growth Rates
4. Natural Pruning
5. What is a Tree
6. Scheduling Strategies

Appendix 1

Table 1: Major Tree Species and Growth Rates

Common Name	Scientific Name	Growth Rate
Eastern Redcedar	*Juniperus virginiana*	S
Elm	*Ulmus spp.*	F
Green Ash	*Fraxinus pennsylvanica*	M
Hackberry	*Celtis occidentalis*	F
Honeylocust	*Gleditsia triacanthos*	F
Mulberry	*Morus spp.*	F
Pin Oak	*Quercus palustris*	M
Pine	*Pinus spp.*	S
Post Oak	*Quercus stellata*	M
Red Oak	*Quercus rubra*	M
Silver Maple	*Acer saccharinum*	F
Sycamore	*Platanus occidentalis*	F

Appendix 2

The following guidelines (TABLE 2) for tree clearances may apply at the time of line clearance tree maintenance to protect the wires under normal operating conditions. Special clearances may be needed at times because of field conditions. Additional allowance should be made for wires that will sag due to hot weather or swing sideways in strong winds.

Table 2. Recommended Line Clearances (in feet)

Clearance From Trees	Rate of Growth	Secondary Cable (120-480 V)	Open Wire Secondary (120-480 V	Primary Voltage (2-25 kV)
SIDE	Slow Fast	2 (c) 4 (c)	2 (c) 6 (c)	8 (c) 12 (c)
OVER	Slow Fast	2 4	2 6	15 (a) 15 (a)
UNDER	Slow Fast	3 4	4 8	8 12

Site Considerations:

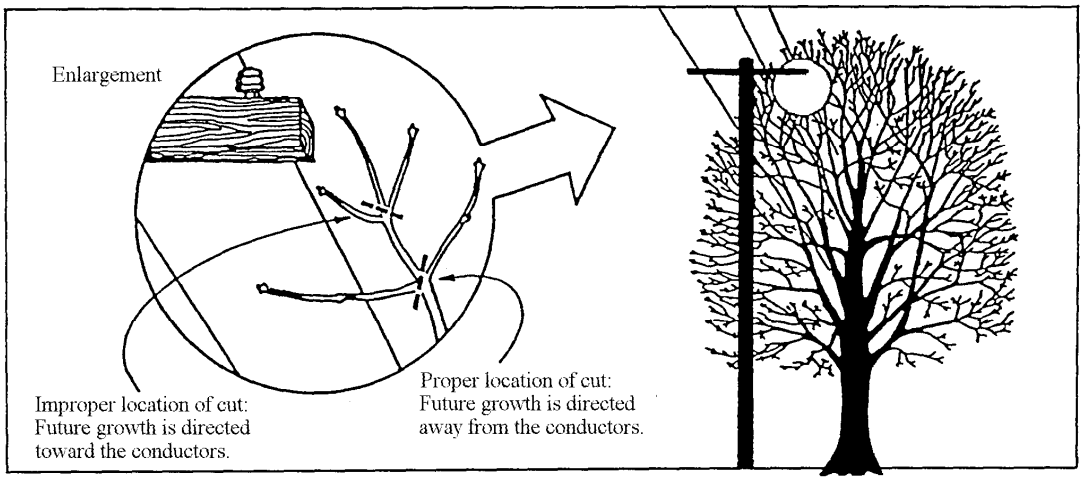
(a) Remove all hazardous overhang, and all overhang within 15 feet of the conductors that could contact them if weakened or broken. Remove all overhang over 3-phase lines.

(b) Remove all trees that could grow into, or fall into the lines.

(c) Large tree trunks or major limbs of established trees may be allowed to remain as close as 2 feet from the conductors if all of the following are true:

- Movement of either the conductor or the tree will not result in contact between the tree and the conductor.
- The tree is not easily or readily climbed without the use of ladders or specialized climbing equipment.
- There is no evidence of re-growth or sprouting from the tree trunk toward the line.

Appendix 3



Natural Pruning (to direct growth away from wires)

Natural pruning is a method by which branches are cut at a suitable parent limb back toward the center of the tree. The cut should be made as close as possible to the branch collar at the branch base, however the branch collar should not be injured or removed. Every branch has a branch bark ridge that separates the branch from the main stem. The cut should be made on the outer side of the ridge. If the cut is made on the inner side of the branch bark ridge, a “larger” wound will result that may inhibit the trees ability to naturally compartmentalize the wound, increasing wound closure time and the risk of entry for microorganisms. This method of pruning is sometimes called “drop-crotching”, “direction trimming” or “lateral trimming.” Large branches should be removed to laterals at least one-third the diameter of the branch being removed. Natural pruning is especially adapted to the topping of large trees where a great deal of wood must be removed.

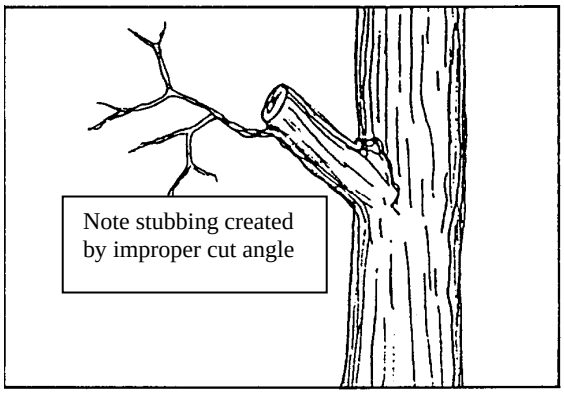
In natural pruning, almost all cuts are made with a saw, and very little pole pruning works is required. This results in a natural looking tree when finished, even if a large amount of wood has been removed. However, a hydraulic or manual pole pruner is required to trim those smaller laterals that cannot be properly trimmed using the pole saw and each crew shall be equipped with the necessary hydraulic pruners for lift crews and manual pruners for climbing crews.

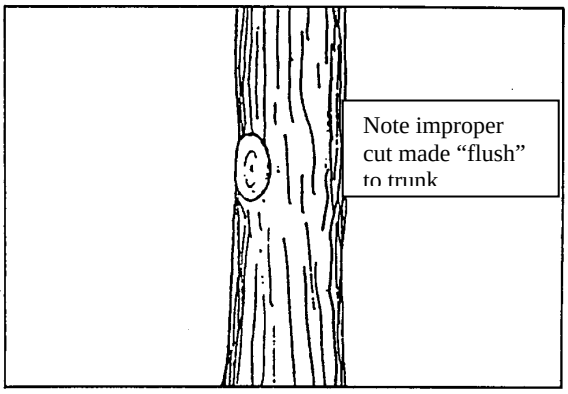
Natural pruning is also directional pruning, since it tends to guide the growth of the tree away from the wires. Stubbing or pole-clip clearance, on the other hand, tends to promote rapid sucker growth right back into the conductors. It is important to remember ~~is~~ that natural pruning does work, and that two or three trimming cycles done in this manner will bring about an ideal situation for both the utility and the tree owner. Most shade trees lend themselves easily to this type of pruning.

Natural pruning techniques should be used for top pruning, side pruning, under pruning, and combinations as described on the following pages.

Natural Pruning Details

Improper Trimming Techniques



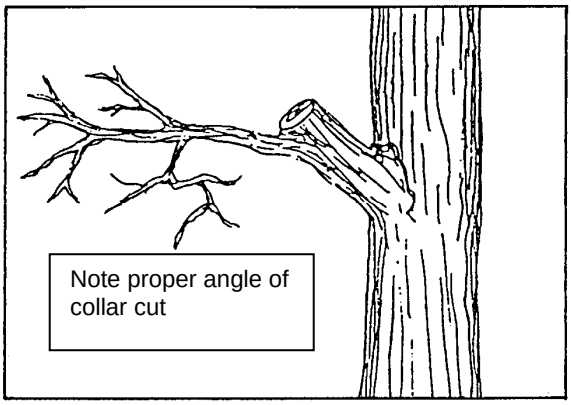


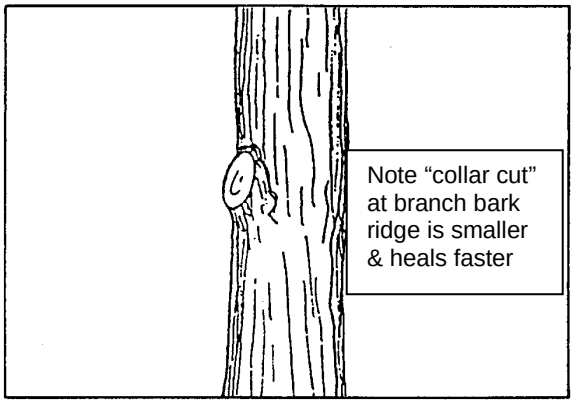
Details of improper trimming and proper natural pruning techniques are shown here. The branch at left above was cut back to a lateral that is too small. Branches should be cut back to a lateral that is at least one-third the size of the branch being removed as shown at left below. If a proper lateral is not available, the branch should be cut back to the trunk. Note that the remaining limb should be trimmed in a manner that meets the minimum clearance requirements while "training" it to grow away from the conductors. When limbs growing toward the conductors cannot be trimmed to meet these requirements, they should be removed back to the truck of the tree.

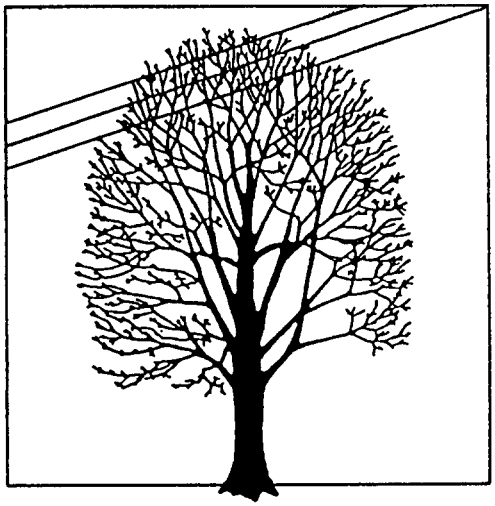
The cut shown at right above is an improper flush cut where the branch collar was removed. The cut at right below shows the proper method to remove the branch at the trunk, leaving the branch collar but not a stub.

The CONTRACTOR shall remove all past stubbing, correctly trimming these limbs back to a lateral one third the size of the parent limb, or removing them back to the trunk of the tree, to promote proper healing. Removal back the truck will be the preferred method when it would create a "cleaner" appearance and minimize future re-growth and trimming.

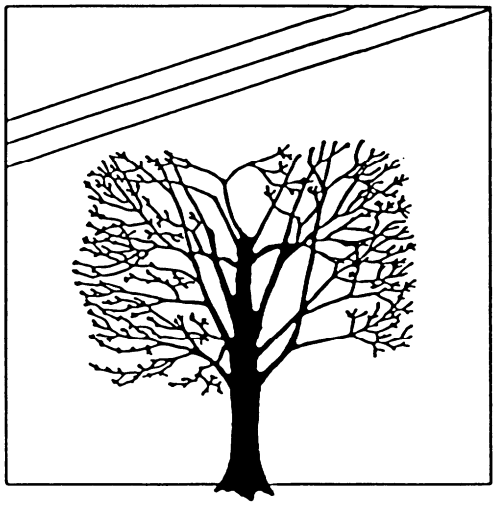
Proper Pruning Techniques







Before Top Pruning



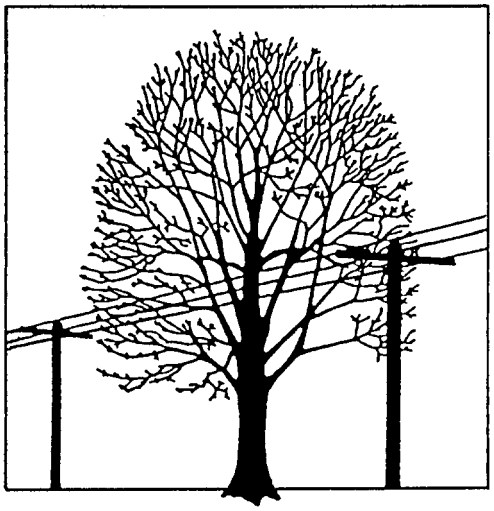
After Top Pruning

1. TOP PRUNING

Top pruning involves cutting back large portions of the upper crown of the tree. Top pruning is often required where a tree is located directly beneath a line. The main leader or leaders are cut back to a suitable lateral. (The lateral should be at least one-third the diameter of the limb being removed.) While most cuts should be made with a saw; a hydraulic or manual pole pruner is still required to properly prune the small lateral limbs that cannot be properly pruned using a pole saw.

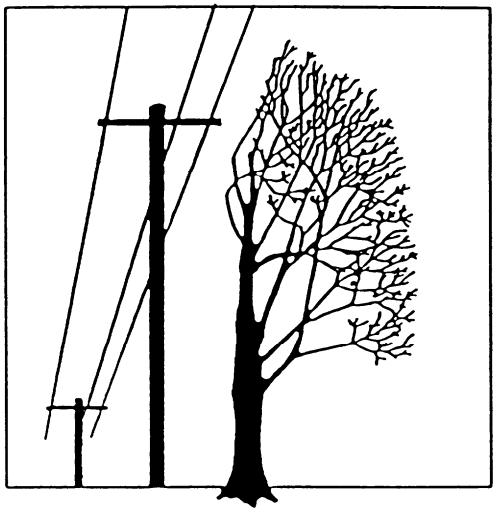
For the sake of appearance and to limit the amount of regrowth, it is best not to remove more than one-fourth of the crown when top pruning. In certain species, removal of too much of the crown may result in death of the tree.

Top trimming is generally required to address the situation where a tall growing tree has been planted or grown underneath the lines. Top trimming should NOT be used on those trees that are located partially under the line, where part of the tree could be trained to grow away from and/or beside the line, specifically required by the property owner. Side trimming is discussed in the next section.



Before Side Pruning

After Side Pruning
Rural – R/W areas



2. SIDE PRUNING IN NON-RESIDENTIAL R/W AREAS

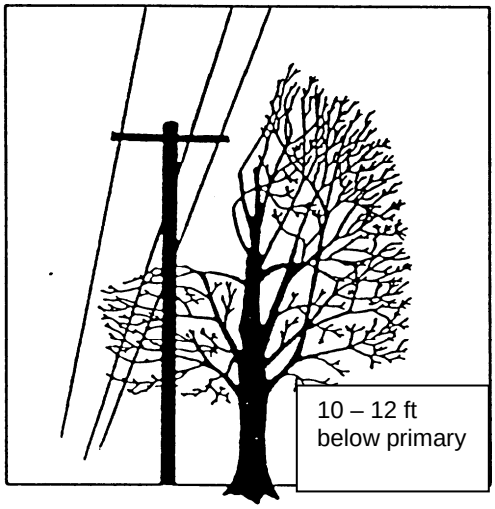
In non-residential or rural right-of-way situations side pruning consists of cutting back or removing the side branches that are threatening the conductors from ground to sky. Side pruning is required where trees are growing adjacent to utility lines. Limbs should be removed at a lateral branch or the main trunk wherever possible to minimize future re-growth. All branches beneath the conductors should be removed to prevent them from growing up into the lines. Avoid unsightly notches in the tree, if possible.

3. SIDE PRUNING IN RESIDENTIAL AREAS

In residential situations, where the tree to be trimmed is part of a lawn or landscape setting it is often necessary to leave a “shelf” of branches below the phone cable level, or at least 10 – 12 feet below the primary level. While this is NOT a preferred trimming methods, it is commonly required in residential areas in order to maintain as much of the natural appearance, screening and shade value of the tree as possible. Trees that would require excessive trimming or create serious visual impacts for the property owner should be candidates for removal.

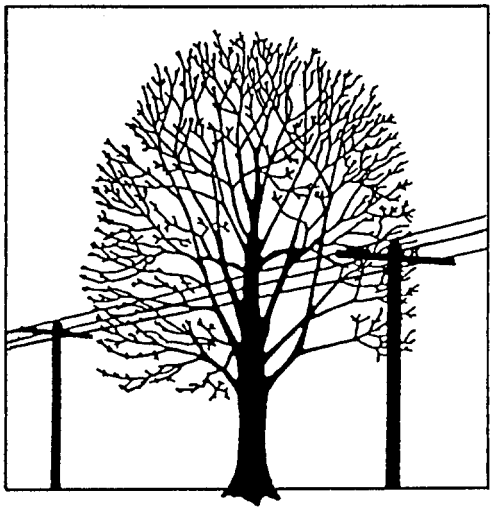
When shelf trimming is performed the remaining branches shall be trimmed so as to train them to grow out flat, or down and away from the conductors. Branches growing up, toward the overhead conductors should be removed or trimmed to laterals growing away from the wires.

After Side Pruning
Residential Areas

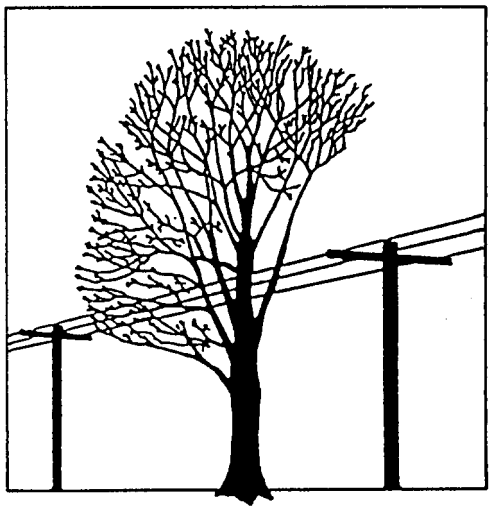


4. UNDER PRUNING

Under pruning involves removing the lower limbs of the tree to allow wires to pass below the tree crown. All cuts should be made as close as possible to the branch bark ridge at the branch collar, to avoid leaving unsightly stubs. The natural shape of the tree is retained in this type of pruning, and the tree can continue its normal growth. Overhangs shall be trimmed as required by this specification in Exhibit C Table 1, the species of tree, location. All dead branches above the wires shall be removed, regardless of height, since this dead wood could easily break off and cause an interruption.



Before Under Pruning



After Under Pruning

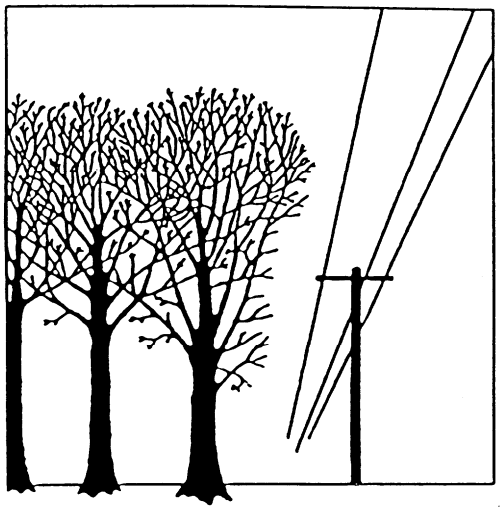
5. COMBINATIONS

It may be necessary to combine several pruning types in order to achieve a good-looking job and to obtain adequate clearances.

Improper Trimming Methods

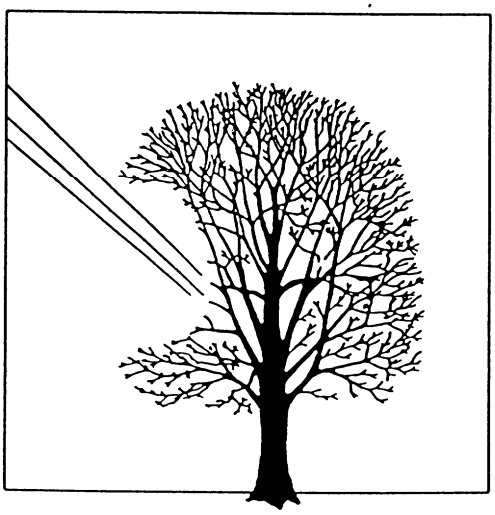
6. **SIDE TRIM STUBBING**

This is done by stubbing off portions of limbs along the side of the tree to obtain clearance. Cutting off portions of limbs (leaving stubs) to obtain clearance creates many fast-growing suckers that become a serious line clearance problem. Corrective pruning will be required to eliminate and repair past stubbing practices when they are encountered.



7. **"SHAPING" AROUND LINES**

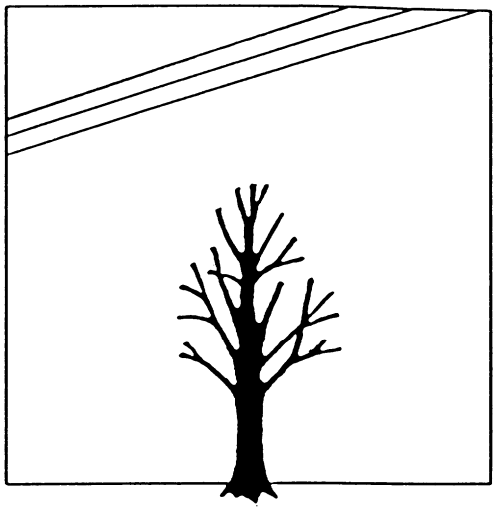
This is done by trimming limbs in an arc to obtain clearance. This unsightly method of trimming leaves branches above the conductors that could bend or break, causing outages. Shaping also creates many fast-growing suckers.

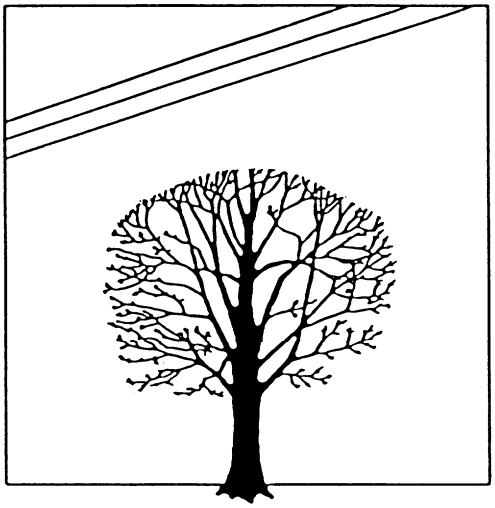


8. POLLARDING

This is done by stubbing off major limbs to greatly reduce the size of the tree crown. The result is not only unsightly, but promotes a multitude of fast-growing suckers that sprout from the stubs. The combination of stubbing and re-sprouting leads to weak limb attachments, disease and decay, which then lead to a serious reliability and line clearance problem.

Pollarding is unacceptable.



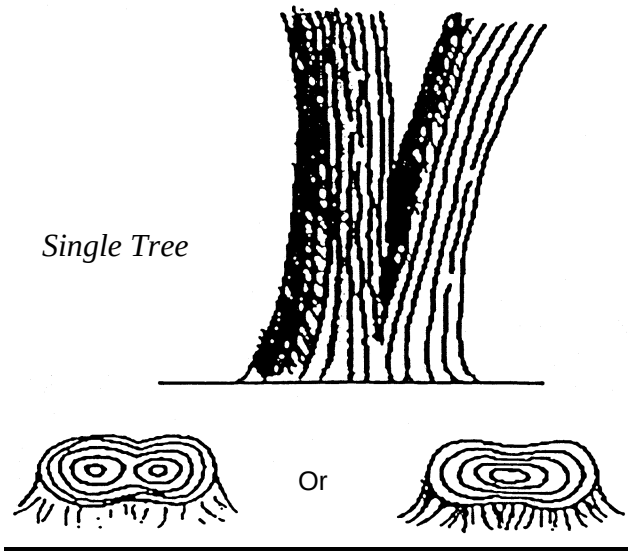


9. ROUNDING OVER

Rounding over (or shearing) is done by making many small cuts so that the tree top is sheared in a uniform line. This creates an unhealthy tree condition and results in rapid regrowth of suckers directly toward the electric conductors.

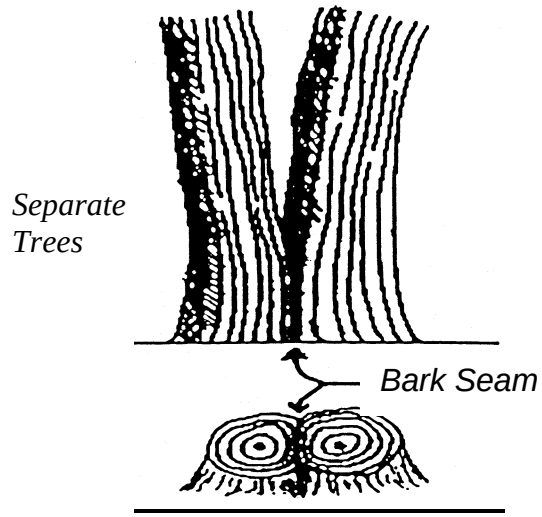
When a round over is done using a pole saw the trimmer usually leaves numerous stubs, rather than following drop crotch and directional trimming principles. This stubbing commonly leads to decay, disease and rapid re-growth. This condition is unacceptable, except when mandated by customer requirements, and even then should be a last resort.

When a round over must be done, it shall be completed using the proper hydraulic or manual pruning tools, following the proper collar cut procedures. Stubbing is unacceptable. The Inspector shall be notified before a round over is performed.



10. SINGLE-STEM TREE IDENTIFICATION

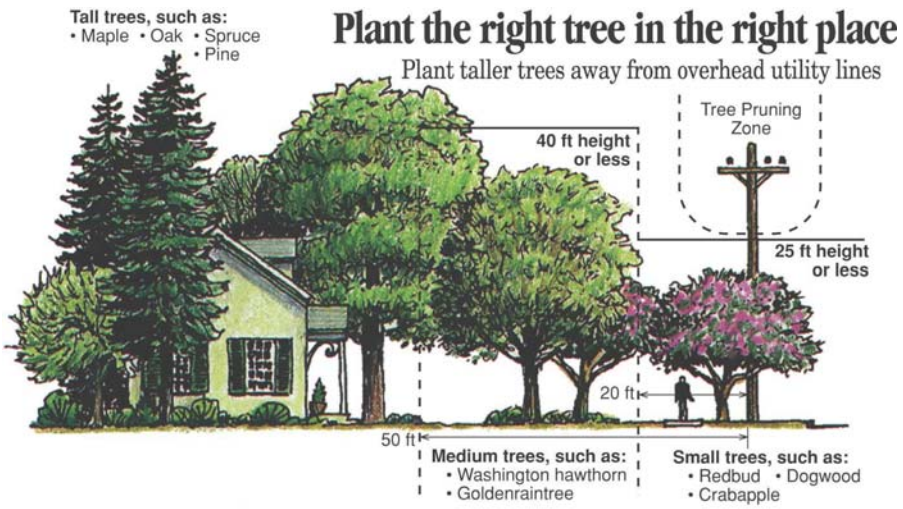
A tree that splits above ground line and has a visible included bark seam down to the ground line is considered a single tree.



11. MULTI-STEM TREE IDENTIFICATION

A tree that splits at ground line is considered multiple trees. A tree that splits above ground line, but has a visible included bark seam down to the ground line is considered separate trees.

Appendix 4


Plant the right tree in the right place
Plant taller trees away from overhead utility lines
Tall trees, such as:
• Maple • Oak • Spruce
• Pine
Tree Pruning Zone
40 ft height or less
25 ft height or less
20 ft
50 ft
Medium trees, such as:
• Washington hawthorn
• Goldenraintree
Small trees, such as:
• Redbud • Dogwood
• Crabapple

Section 1.1.2

Primary Cycle Schedule

Empire District Electric Company

Vegetation Management Plan Summary

4 Year Maintenance Cycle

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
209	17121	256.7	0.0	15.5	41.2	38.5	73.7	66.5	78.0	38.5	73.7
211	7859	106.9	0.0	15.8	19.9	21.7	27.3	38.0	19.9	21.7	27.3
212	6634	290.9	29.0	96.3	86.2	79.5	63.6	61.7	86.2	54.5	29.0
213	7955	161.7	15.7	0.0	20.2	35.4	61.2	45.0	20.2	35.4	61.2
214	27424	354.6	0.0	19.3	14.8	102.3	71.7	82.0	98.6	102.3	109.7
215	9763	168.3	0.0	0.0	0.0	35.2	56.0	55.6	21.4	35.2	77.6
216	4887	99.6	0.0	0.0	0.0	21.4	30.2	24.1	23.9	21.4	30.2
217	10385	159.2	0.0	59.8	23.2	20.2	44.0	71.7	23.2	20.2	70.3
Total	**92028**	**1598**	**44.7**	**206.8**	**205.5**	**354.2**	**427.8**	**444.5**	**371.4**	**329.2**	**479.1**
Running %					**12.9%**	**35.0%**	**61.8%**	**89.6%**	**112.9%**	**133.5%**	**163.4%**
Target %					**7.5%**	**27.5%**	**55.0%**	**85.0%**	**112.5%**	**137.50%**	**162.50%**

6 Year Maintenance Cycle

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
209	2921	96.0	29.6	39.4	0.0	17.7	0.0	0.0	38.8	39.4	0.0
211	13227	709.3	105.3	43.2	120.7	50.5	111.5	139.2	129.1	148.5	130.5
212	10387	529.6	0.0	0.0	0.0	61.6	113.1	53.7	78.2	106.1	116.9
213	9874	585.0	65.4	150.8	91.9	56.7	49.3	95.4	101.8	101.1	180.6
214	4587	227.1	54.1	0.0	0.0	0.0	0.0	58.1	51.2	63.6	54.1
215	12929	633.9	31.4	93.6	0.0	57.6	84.0	140.2	118.4	139.9	93.6
216	17925	786.8	72.9	0.0	138.2	66.7	86.2	146.7	137.9	137.6	161.3
217	8669	335.6	51.9	0.0	124.3	51.3	0.0	22.1	33.6	75.8	152.8
Total	**80519**	**3903.2**	**410.6**	**327.0**	**475.1**	**362.2**	**444.2**	**655.6**	**689.0**	**812.0**	**889.9**
Running %					**12.2%**	**21.5%**	**32.8%**	**49.6%**	**67.3%**	**88.1%**	**110.9%**
Target %					**5.0%**	**15.0%**	**31.7%**	**50.0%**	**70.0%**	**90.0%**	**109.0%**

Empire District Totals	**172547**	**5501.1**	**455.3**	**533.8**	**680.6**	**716.4**	**872.1**	**1100.1**	**1060.3**	**1141.2**	**1369.0**

Company Totals

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
209	20042	352.7	29.6	55.0	41.2	56.3	73.7	66.5	116.8	78.0	73.7
211	21086	816.2	105.3	59.0	140.6	72.2	138.9	177.2	148.9	170.2	157.9
212	17021	820.5	29.0	96.3	86.2	141.1	176.7	115.4	164.4	160.6	145.8
213	17829	746.7	81.2	150.8	112.1	92.1	110.5	140.4	121.9	136.5	241.8
214	32011	581.7	54.1	19.3	14.8	102.3	71.7	140.2	149.8	165.9	163.8
215	22692	802.2	31.4	93.6	0.0	92.9	140.1	195.8	139.9	175.1	171.2
216	22812	886.4	72.9	0.0	138.2	88.1	116.5	170.8	161.8	159.0	191.5
217	19054	494.8	51.9	59.8	147.5	71.6	44.0	93.8	56.8	96.0	223.2
Total	**172547**	**5501.1**	**455.3**	**533.8**	**680.6**	**716.4**	**872.1**	**1100.1**	**1060.3**	**1141.2**	**1369.0**

Company Percentages/Year

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
209	20042	6.4%	6.5%	10.3%	6.1%	7.9%	8.5%	6.0%	11.0%	6.8%	5.4%
211	21086	14.8%	23.1%	11.0%	20.7%	10.1%	15.9%	16.1%	14.0%	14.9%	11.5%
212	17021	14.9%	6.4%	18.0%	12.7%	19.7%	20.3%	10.5%	15.5%	14.1%	10.7%
213	17829	13.6%	17.8%	28.3%	16.5%	12.9%	12.7%	12.8%	11.5%	12.0%	17.7%
214	32011	10.6%	11.9%	3.6%	2.2%	14.3%	8.2%	12.7%	14.1%	14.5%	12.0%
215	22692	14.6%	6.9%	17.5%	0.0%	13.0%	16.1%	17.8%	13.2%	15.3%	12.5%
216	22812	16.1%	16.0%	0.0%	20.3%	12.3%	13.4%	15.5%	15.3%	13.9%	14.0%
217	19054	9.0%	11.4%	11.2%	21.7%	10.0%	5.0%	8.5%	5.4%	8.4%	16.3%
Total	**172547**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

East/West Totals

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
East	78011	2410.4	267.9	324.6	441.4	292.1	367.1	477.9	444.5	480.6	696.6
West	94536	3090.7	187.3	209.2	239.2	424.3	505.0	622.2	615.8	660.6	672.4
Total	**172547**	**5501.1**	**455.3**	**533.8**	**680.6**	**716.4**	**872.1**	**1100.1**	**1060.3**	**1141.2**	**1369.0**

State Totals

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
MO	150483	4486.8	426.3	437.5	544.1	537.9	691.1	930.6	895.9	911.6	1223.1
KS	10387	529.6	0.0	0.0	0.0	61.6	113.1	53.7	78.2	106.1	116.9
OK	7197	312.3	29.0	96.3	86.2	100.9	63.6	61.7	86.2	75.9	29.0
AR	4480	172.4	0.0	0.0	50.3	16.1	4.2	54.2	0.0	47.6	0.0
Total	**172547**	**5501.1**	**455.3**	**533.8**	**680.6**	**716.4**	**872.1**	**1100.1**	**1060.3**	**1141.2**	**1369.0**

State 4 Year Maintenance Totals

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
MO	84831	1285.6	15.7	110.5	119.3	253.3	364.3	382.9	285.2	253.3	450.1
KS	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OK	7197	312.3	29.0	96.3	86.2	100.9	63.6	61.7	86.2	75.9	29.0
AR	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**92028**	**1597.9**	**44.7**	**206.8**	**205.5**	**354.2**	**427.8**	**444.5**	**371.4**	**329.2**	**479.1**

State 6 Year Maintenance Totals

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
MO	65652	3201.3	410.6	327.0	424.8	284.6	326.9	547.7	610.7	658.3	773.1
KS	10387	529.6	0.0	0.0	0.0	61.6	113.1	53.7	78.2	106.1	116.9
OK	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AR	4480	172.4	0.0	0.0	50.3	16.1	4.2	54.2	0.0	47.6	0.0
Total	**80519**	**3903.2**	**410.6**	**327.0**	**475.1**	**362.2**	**444.2**	**655.6**	**689.0**	**812.0**	**889.9**

State 4 Year Maintenance Running Percentage for that State

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
MO	84831	1285.6	0	0	9.3%	29.0%	57.3%	87.1%	109.3%	129.0%	164.0%
KS	0	0.0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OK	7197	312.3	0	0	27.6%	59.9%	80.3%	100.0%	127.6%	151.9%	161.2%
AR	0	0.0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**92028**	**1597.9**	**0.0**	**0.0**	**36.9%**	**88.9%**	**137.6%**	**187.1%**	**236.9%**	**280.9%**	**325.2%**

State 6 Year Maintenance Running Percentage for that State

Area	Total Meters	Total Miles	2006 Miles Trimmed	2007 Miles Trimmed	2008 Miles Scheduled	2009 Miles Scheduled	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled
MO	65652	3201.3	0	0	13.3%	22.2%	32.4%	49.5%	68.6%	89.1%	113.3%
KS	10387	529.6	0	0	0.0%	11.6%	33.0%	43.1%	57.9%	77.9%	100.0%
OK	0	0.0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AR	4480	172.4	0	0	29.2%	38.5%	41.0%	72.4%	72.4%	100.0%	100.0%
Total	**80519**	**3903.2**	**0.0**	**0.0**	**42.5%**	**72.3%**	**106.3%**	**165.0%**	**198.9%**	**267.1%**	**313.3%**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
3121	209	312	MO	1053	16.5	59.1	4			16.5				16.5		
3311	209	331	MO	635	8.9	39.3	4					8.9				8.9
3312	209	331	MO	17	4.1	3.6	4					4.1				4.1
3313	209	331	MO	486	5.7	39.7	4						5.7			
3314	209	331	MO	207	6.0	29.2	4				6.0				6.0	
3315	209	331	MO	1032	26.1	32.9	4					26.1				26.1
3871	209	387	MO	1215	11.2	83.3	4					11.2				11.2
3872	209	387	MO	896	11.5	68.0	4			11.5				11.5		
3873	209	387	MO	1815	32.5	45.1	4				32.5				32.5	
3874	209	387	MO	186	3.4	28.7	4						3.4			
4101	209	410	MO	553	13.2	33.5	4			13.2				13.2		
4102	209	410	MO	800	15.5	38.3	4		15.5				15.5			
4131	209	413	MO	179	4.9	26.5	4					4.9				4.9
4132	209	413	MO	408	4.9	66.2	4					4.9				4.9
4133	209	413	MO	298	6.1	28.1	4						6.1			
4134	209	413	MO	782	8.2	51.5	4					8.2				8.2
4135	209	413	MO	61	1.3	20.8	4							1.3		
4136	209	413	MO	601	2.5	85.6	4							2.5		
4137	209	413	MO	719	9.3	67.3	4							9.3		
4138	209	413	MO	694	11.4	55.2	4						11.4			
4331	209	433	MO	273	8.3	20.4	4						8.3			
4332	209	433	MO	203	3.6	35.5	4						3.6			
4333	209	433	MO	389	5.4	31.9	4					5.4				5.4
4334	209	433	MO	377	4.6	52.7	4							4.6		
4381	209	438	MO	208	12.4	9.5	4						12.4			
4383	209	438	MO	319	9.3	24.7	4							9.3		
4385	209	438	MO	1090	6.8	62.7	4							6.8		
4386	209	438	MO	1625	3.0	120.4	4							3.0		
Total				**17121**	**256.7**			**0.0**	**15.5**	**41.2**	**38.5**	**73.7**	**66.5**	**78.0**	**38.5**	**73.7**
2951	209	295	MO	1268	39.4	29.9	6		39.4						39.4	
2952	209	295	MO	140	8.3	15.8	6							8.3		
3122	209	312	MO	818	29.6	24.3	6	29.6						29.6		
3123	209	312	MO	670	17.7	31.8	6				17.7					
4561	209	456	MO	25	0.9	3.2	6							0.9		
Total				**2921**	**96.0**			**29.6**	**39.4**	**0.0**	**17.7**	**0.0**	**0.0**	**38.8**	**39.4**	**0.0**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
1242	211	124	MO	663	7.2	88.8	4				7.2				7.2	
1243	211	124	MO	974	17.1	52.6	4					17.1				17.1
2211	211	221	MO	721	19.9	35.5	4			19.9				19.9		
3551	211	355	MO	1005	10.2	82.2	4					10.2				10.2
3591	211	359	MO	984	15.8	45.6	4		15.8				15.8			
3593	211	359	MO	986	5.3	98.4	4				5.3				5.3	
3594	211	359	MO	524	9.2	39.2	4				9.2				9.2	
4511	211	451	MO	1546	18.4	55.2	4						18.4			
4512	211	451	MO	0	0.0	0.0	4						0.0			
4513	211	451	MO	456	3.8	39.1	4						3.8			
Total				**7859.0**	**106.9**			**0.0**	**15.8**	**19.9**	**21.7**	**27.3**	**38.0**	**19.9**	**21.7**	**27.3**
1241	211	124	MO	831	28.8	26.7	6							28.8		
1521	211	152	MO	1560	105.3	14.6	6	105.3							105.3	
1522	211	152	MO	138	16.1	8.3	6							16.1		
1523	211	152	MO	697	54.0	12.7	6						54.0			
2051	211	205	MO	210	21.3	9.9	6							21.3		
2052	211	205	MO	440	18.8	23.4	6						18.8			
2212	211	221	MO	1097	48.6	19.8	6			48.6						48.6
2622	211	262	MO	111	12.0	9.1	6							12.0		
3552	211	355	MO	550	17.3	29.9	6						17.3			
3553	211	355	MO	949	49.2	19.0	6						49.2			
3592	211	359	MO	1534	50.5	27.9	6				50.5					
3621	211	362	MO	1135	72.1	15.4	6			72.1						72.1
3901	211	390	MO	862	29.9	27.9	6		29.9						29.9	
3902	211	390	MO	93	9.9	9.1	6									9.9
3903	211	390	MO	276	13.3	20.3	6		13.3						13.3	
4371	211	437	MO	2169	111.5	19.0	6					111.5				
4372	211	437	MO	575	50.8	10.7	6							50.8		
Total				**13227.0**	**709.3**			**105.3**	**43.2**	**120.7**	**50.5**	**111.5**	**139.2**	**129.1**	**148.5**	**130.5**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
1861	212	186	OK	711	34.6	20.4	4		34.6			34.6				
2712	212	271	OK	1169	54.5	21.4	4				54.5				54.5	
2912	212	291	OK	714	25.0	28.1	4				25.0					
3631	212	363	OK	1233	61.7	19.8	4		61.7				61.7			
3771	212	377	OK	1086	66.0	16.4	4			66.0				66.0		
3772	212	377	OK	10	1.4	5.8	4			1.4				1.4		
3773	212	377	OK	119	17.2	6.9	4			17.2				17.2		
3811	212	381	OK	859	13.0	65.7	4	13.0				13.0				13.0
3812	212	381	OK	720	16.0	44.9	4	16.0				16.0				16.0
4281	212	428	OK	13	1.6	7.2	4			1.6				1.6		
Total				**6634.0**	**290.9**			**29.0**	**96.3**	**86.2**	**79.5**	**63.6**	**61.7**	**86.2**	**54.5**	**29.0**
6601	212	66	KS	787	49.4	15.9	6							49.4		
6602	212	66	KS	499	20.1	24.8	6									20.1
2711	212	271	KS	237	59.3	4.0	6								59.3	
2781	212	278	KS	1	0.6	1.6	6							0.6		
2782	212	278	KS	1457	53.7	26.7	6						53.7			
2783	212	278	KS	1119	44.7	24.8	6								44.7	
2821	212	282	KS	424	9.6	42.8	6									9.6
2822	212	282	KS	374	6.7	54.7	6									6.7
2823	212	282	KS	524	25.1	20.6	6									25.1
2824	212	282	KS	923	15.0	53.3	6							15.0		
2911	212	291	KS	1194	61.6	19.4	6				61.6					
2913	212	291	KS	879	12.8	68.7	6							12.8		
2914	212	291	KS	544	16.6	31.9	6									16.6
2991	212	299	KS	1	0.4	2.6	6									0.4
3391	212	339	KS	13	2.3	5.5	6									2.3
4061	212	406	KS	1220	113.1	10.7	6					113.1				
4062	212	406	KS	4	2.1	1.9	6								2.1	
4251	212	425	KS	185	36.0	5.1	6									36.0
4441	212	444	KS	2	0.4	4.1	6							0.4		
Total				**10387.0**	**529.6**			**0.0**	**0.0**	**0.0**	**61.6**	**113.1**	**53.7**	**78.2**	**106.1**	**116.9**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
3671	213	367	MO	1058	13.9	63.2	4						13.9			
3672	213	367	MO	145	1.8	79.2	4						1.8			
3673	213	367	MO	257	19.9	11.9	4					19.9				19.9
3674	213	367	MO	0	0.0	0.0	4									
3675	213	367	MO	414	4.8	62.7	4				4.8				4.8	
4091	213	409	MO	1105	20.2	48.7	4			20.2				20.2		
4182	213	418	MO	930	21.8	39.4	4					21.8				21.8
4311	213	431	MO	964	9.1	84.1	4						9.1			
4312	213	431	MO	1412	30.6	32.7	4				30.6				30.6	
4313	213	431	MO	0	0.0	0.0	4									
6021	213	602	MO	597	19.5	27.1	4					19.5				19.5
6022	213	602	MO	400	4.5	79.7	4						4.5			
6143	213	614	MO	363	8.8	41.2	4	8.8					8.8			
6144	213	614	MO	310	7.0	44.4	4	7.0					7.0			
Total				**7955.0**	**161.7**			**15.7**	**0.0**	**20.2**	**35.4**	**61.2**	**45.0**	**20.2**	**35.4**	**61.2**
2091	213	209	MO	815	56.7	14.3	6				56.7					
2092	213	209	MO	820	32.0	25.4	6			32.0						32.0
2171	213	217	MO	510	30.6	16.5	6						30.6			
2172	213	217	MO	207	34.4	6.0	6						34.4			
2491	213	249	MO	60	14.5	4.2	6							14.5		
2501	213	250	MO	77	4.2	17.9	6						4.2			
2511	213	251	MO	592	22.5	26.1	6		22.5						22.5	
2621	213	262	MO	1094	88.7	12.3	6		88.7							88.7
3041	213	304	MO	76	3.1	24.8	6							3.1		
3081	213	308	MO	549	28.4	19.3	6		28.4						28.4	
3082	213	308	MO	320	11.2	28.6	6		11.2						11.2	
3181	213	318	MO	686	49.3	13.8	6					49.3				
3231	213	323	MO	357	18.7	19.0	6								18.7	
3232	213	323	MO	422	18.8	21.3	6							18.8		
3421	213	342	MO	624	25.0	24.1	6			25.0						25.0
3422	213	342	MO	950	35.0	25.6	6			35.0						35.0
4092	213	409	MO	386	26.2	14.4	6						26.2			
4181	213	418	MO	453	20.3	20.8	6								20.3	
6141	213	614	MO	876	65.4	13.0	6	65.4						65.4		
Total				**9874.0**	**585.0**			**65.4**	**150.8**	**91.9**	**56.7**	**49.3**	**95.4**	**101.8**	**101.1**	**180.6**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
1225	214	59	MO	931	7.5	121.5	4				7.5				7.5	
1226	214	59	MO	339	3.7	80.7	4					3.7				3.7
1227	214	59	MO	1164	19.3	57.3	4		19.3					19.3		
1228	214	59	MO	491	4.1	117.3	4					4.1				4.1
1229	214	59	MO	1972	13.1	149.9	4				13.1				13.1	
401	214	64	MO	102	0.7	133.1	4							0.7		
402	214	64	MO	107	1.9	57.6	4							1.9		
403	214	64	MO	254	2.7	95.2	4							2.7		
404	214	64	MO	166	1.2	131.4	4							1.2		
405	214	64	MO	43	0.5	71.8	4							0.5		
406	214	64	MO	70	0.7	103.5	4							0.7		
407	214	64	MO	98	0.9	103.6	4							0.9		
432	214	100	MO	83	1.0	76.8	4							1.0		
433	214	100	MO	40	0.6	71.0	4							0.6		
434	214	100	MO	28	0.7	35.4	4							0.7		
1451	214	145	MO	481	11.2	38.8	4		t&e				11.2			
1453	214	145	MO	1762	20.4	84.1	4				20.4				20.4	
1454	214	145	MO	892	14.2	61.8	4						14.2			
1455	214	145	MO	505	7.9	60.9	4		t&e				7.9			
1261	214	258	MO	396	4.0	82.2	4							4.0		
1262	214	258	MO	198	5.4	35.8	4					5.4				5.4
1263	214	258	MO	1364	14.8	89.0	4			14.8				14.8		
1264	214	258	MO	41	3.8	10.0	4							3.8		
1265	214	258	MO	1209	9.7	86.6	4					9.7				9.7
1267	214	258	MO	70	3.3	16.0	4						3.3			
451	214	284	MO	0	0.4	0.0	4							0.4		
452	214	284	MO	0	0.1	0.0	4							0.1		
453	214	284	MO	126	1.0	124.0	4							1.0		
454	214	284	MO	102	1.7	59.9	4							1.7		
455	214	284	MO	73	0.7	79.1	4							0.7		
456	214	284	MO	45	0.5	66.9	4							0.5		
457	214	284	MO	0	0.0	0.0	4							0.0		
1273	214	341	MO	863	8.6	93.3	4				8.6				8.6	
1274	214	341	MO	8	2.0	3.9	4							2.0		
1281	214	360	MO	81	1.9	22.0	4					1.9				1.9
1282	214	360	MO	891	12.3	66.0	4				12.3				12.3	

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
1283	214	360	MO	363	1.8	48.7	4							1.8		
1284	214	360	MO	663	9.1	68.2	4				9.1				9.1	
1285	214	360	MO	1126	6.0	71.4	4					6.0				6.0
1286	214	360	MO	43	1.3	16.8	4							1.3		
1287	214	360	MO	1	0.3	2.5	4							0.3		
1230	214	372	MO	1131	12.4	90.7	4							12.4		
1231	214	372	MO	3	0.2	16.6	4							0.2		
1232	214	372	MO	1143	14.5	75.7	4	t&e				14.5				14.5
1233	214	372	MO	629	4.9	127.0	4							4.9		
3911	214	391	MO	6	0.4	5.0	4							0.4		
3912	214	391	MO	1118	15.6	54.7	4					15.6				15.6
3914	214	391	MO	676	38.0	15.8	4						38.0			38.0
4222	214	422	MO	1533	10.9	114.1	4					10.9				10.9
4223	214	422	MO	1207	10.6	91.3	4				10.6				10.6	
4224	214	422	MO	625	7.5	60.9	4						7.5			
4301	214	430	MO	606	4.5	85.8	4							4.5		
4302	214	430	MO	640	10.4	36.8	4							10.4		
4303	214	430	MO	767	20.6	26.7	4				20.6				20.6	
4304	214	430	MO	130	1.3	39.8	4							1.3		
4471	214	447	MO	5	0.8	3.9	4							0.8		
4472	214	447	MO	14	1.0	11.5	4							1.0		
Total				**27424.0**	**354.6**			**0.0**	**19.3**	**14.8**	**102.3**	**71.7**	**82.0**	**98.6**	**102.3**	**109.7**
1452	214	145	MO	397	19.9	18.9	6								19.9	
145D	214	145	MO	1	0.1	6.5	6								0.1	
1271	214	341	MO	874	42.3	20.3	6								42.3	
1272	214	341	MO	13	1.2	6.9	6								1.2	
3891	214	389	MO	392	26.9	13.8	6						26.9			
3892	214	389	MO	1193	51.2	16.7	6							51.2		
3913	214	391	MO	1258	54.1	19.3	6	54.1								54.1
4221	214	422	MO	459	31.2	13.3	6						31.2			
Total				**4587.0**	**227.1**			**54.1**	**0.0**	**0.0**	**0.0**	**0.0**	**58.1**	**51.2**	**63.6**	**54.1**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
1050	215	105	MO	1381	14.7	90.1	4					14.7				14.7
1051	215	105	MO	1018	17.0	54.2	4				17.0				17.0	
1052	215	105	MO	0	0.0	0.0	4							0.0		
1094	215	109	MO	968	24.5	36.2	4					24.5				24.5
1101	215	110	MO	0	0.0	0.0	4							0.0		
1102	215	110	MO	589	11.6	40.2	4							11.6		
1103	215	110	MO	839	18.3	43.5	4				18.3				18.3	
3661	215	366	MO	1064	20.6	48.4	4						20.6			
4321	215	432	MO	4	0.6	4.4	4							0.6		
4322	215	432	MO	85	1.8	32.8	4							1.8		
4323	215	432	MO	0	0.0	0.0	4							0.0		
4324	215	432	MO	979	16.8	47.0	4					16.8				16.8
4361	215	436	MO	1420	21.6	64.0	4						21.6			21.6
4362	215	436	MO	774	7.3	100.4	4							7.3		
4363	215	436	MO	642	13.5	40.0	4						13.5			
Total				**9763.0**	**168.3**			**0.0**	**0.0**	**0.0**	**35.2**	**56.0**	**55.6**	**21.4**	**35.2**	**77.6**
1081	215	108	MO	20	4.3	4.5	6								4.3	
1082	215	108	MO	1252	118.6	10.5	6								118.6	
1083	215	108	MO	1	1.3	0.7	6								1.3	
1084	215	108	MO	5	1.2	4.2	6								1.2	
1091	215	109	MO	1545	93.6	15.9	6		93.6							93.6
1092	215	109	MO	1111	37.6	25.5	6						37.6			
1093	215	109	MO	206	8.1	24.4	6								8.1	
2492	215	249	MO	29	6.5	4.5	6								6.5	
3662	215	366	MO	1022	58.2	16.7	6							58.2		
3663	215	366	MO	267	28.8	9.3	6							28.8		
3951	215	395	MO	1041	46.0	21.6	6						46.0			
3952	215	395	MO	360	33.9	9.8	6						33.9			
4031	215	403	MO	620	22.7	26.9	6						22.7			
4171	215	417	MO	1071	31.4	31.3	6	31.4						31.4		
4172	215	417	MO	2140	57.6	31.0	6				57.6					
4211	215	421	MO	1472	59.7	23.0	6					59.7				
4212	215	421	MO	767	24.3	30.5	6					24.3				
Total				**12929.0**	**633.9**			**31.4**	**93.6**	**0.0**	**57.6**	**84.0**	**140.2**	**118.4**	**139.9**	**93.6**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
5601	216	56	MO	77	2.9	26.3	4							2.9		
5602	216	56	MO	479	10.0	47.8	4						10.0			
5641	216	56	MO	403	3.2	125.4	4							3.2		
5642	216	56	MO	205	1.9	105.1	4							1.9		
2961	216	296	MO	1643	30.2	47.6	4					30.2				30.2
2962	216	296	MO	238	6.8	30.6	4						6.8			
2963	216	296	MO	1	0.3	3.1	4							0.3		
3752	216	375	OK	563	21.4	26.1	4				21.4				21.4	
3982	216	398	MO	718	7.3	95.1	4						7.3			
4142	216	414	MO	560	15.5	35.6	4							15.5		
Total				**4887.0**	**99.6**			**0.0**	**0.0**	**0.0**	**21.4**	**30.2**	**24.1**	**23.9**	**21.4**	**30.2**
5603	216	56	MO	1176	41.2	27.2	6						41.2			
1311	216	131	MO	238	22.9	10.4	6								22.9	
1312	216	131	MO	873	49.1	17.5	6							49.1		
1841	216	184	MO	1497	50.6	26.5	6				50.6					
1842	216	184	MO	192	15.6	11.8	6								15.6	
1843	216	184	MO	1027	42.8	23.5	6			42.8						42.8
3221	216	322	MO	1162	33.5	33.8	6							33.5		
3222	216	322	MO	936	32.0	29.0	6					32.0				
3261	216	326	AR	266	7.1	34.4	6								7.1	
3262	216	326	AR	36	1.0	36.8	6								1.0	
3263	216	326	AR	111	16.1	6.8	6				16.1					
3471	216	347	MO	156	16.3	9.6	6								16.3	
3472	216	347	MO	1464	51.3	27.9	6						51.3			
3751	216	375	MO	1112	50.1	20.8	6					50.1				
3921	216	392	AR	427	12.1	35.1	6								12.1	
3922	216	392	AR	1703	54.2	30.1	6						54.2			
3923	216	392	AR	1	4.2	0.2	6					4.2				
3981	216	398	MO	1236	72.9	16.8	6	72.9								72.9
3991	216	399	MO	658	55.3	11.9	6							55.3		
3992	216	399	MO	160	8.4	19.0	6								8.4	
4141	216	414	MO	86	13.8	6.0	6								13.8	
4431	216	443	MO	1265	45.1	26.6	6			45.1						45.1
4432	216	443	MO	206	13.0	15.9	6								13.0	
4433	216	443	MO	1	0.5	1.4	6									0.5
7001	216	700	AR	1276	50.3	24.3	6			50.3						
7002	216	700	AR	660	27.4	23.9	6								27.4	
Total				**17925.0**	**786.8**			**72.9**	**0.0**	**138.2**	**66.7**	**86.2**	**146.7**	**137.9**	**137.6**	**161.3**

Empire District Electric

Primary Cycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2006 Trimmed	2007 Trimmed	2008 Planned	2009 Planned	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned
1141	217	114	MO	864	12.0	53.9	4			12.0				12.0		
3301	217	330	MO	200	2.6	77.0	4				2.6				2.6	
3302	217	330	MO	607	11.2	43.3	4			11.2				11.2		
3303	217	330	MO	0	0.0	0.0	4						0.0			
3304	217	330	MO	942	10.6	64.9	4		10.6				10.6			
3305	217	330	MO	8	0.4	12.2	4					0.4				0.4
3702	217	370	MO	601	11.9	42.4	4						11.9			
4151	217	415	MO	1091	23.0	39.2	4		23.0				23.0			
4152	217	415	MO	803	18.1	32.1	4					18.1				18.1
4153	217	415	MO	1012	17.6	39.2	4				17.6				17.6	
4154	217	415	MO	951	6.8	45.6	4					6.8				6.8
4155	217	415	MO	1692	18.8	43.1	4					18.8				18.8
4156	217	415	MO	0	0.0	0.0	4						0.0			
4342	217	434	MO	1614	26.3	48.1	4		26.3				26.3			26.3
Total				**10385**	**159.2**			**0.0**	**59.8**	**23.2**	**20.2**	**44.0**	**71.7**	**23.2**	**20.2**	**70.3**
8001	217	80	MO	4	0.6	7.2	6									0.6
1142	217	114	MO	198	12.5	12.9	6			12.5						12.5
1211	217	121	MO	1388	73.7	18.6	6			73.7						73.7
1212	217	121	MO	67	9.7	6.9	6			9.7						9.7
1213	217	121	MO	519	28.4	18.2	6			28.4						28.4
3331	217	333	MO	2	0.5	4.3	6									0.5
3691	217	369	MO	1241	51.3	22.2	6				51.3					
3692	217	369	MO	1063	23.8	29.8	6								23.8	
3693	217	369	MO	527	14.5	34.5	6							14.5		
3701	217	370	MO	478	22.1	18.5	6						22.1			
3971	217	397	MO	625	19.0	27.8	6							19.0		
4341	217	434	MO	1805	51.9	30.4	6	51.9							51.9	
4343	217	434	MO	752	27.6	23.7	6									27.6
Total				**8669**	**335.6**			**51.9**	**0.0**	**124.3**	**51.3**	**0.0**	**22.1**	**33.6**	**75.8**	**152.8**

Section 1.1.3

Mid-Cycle Schedule

Empire District Electric Company

Midcycle Management Plan Summary

4 Year Midcycle

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
209	17121	256.7	41.2	38.5	73.7	66.5	78.0	38.5	73.7	66.5
211	7859	106.9	19.9	21.7	27.3	38.0	19.9	21.7	27.3	38.0
212	6634	290.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
213	7955	161.7	20.2	35.4	61.2	45.0	20.2	35.4	61.2	45.0
214	27424	354.6	14.8	102.3	71.7	82.0	98.6	102.3	109.7	82.0
215	9763	168.3	0.0	35.2	56.0	55.6	21.4	35.2	77.6	55.6
216	4887	99.6	0.0	0.0	30.2	24.1	23.9	0.0	30.2	24.1
217	10385	159.2	23.2	20.2	44.0	71.7	23.2	20.2	70.3	71.7
Total	**92028**	**1598**	**119.3**	**253.3**	**364.3**	**382.9**	**285.2**	**253.3**	**450.1**	**382.9**

6 Year Midcycle

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
209	2921	96.0	0.0	0.0	17.7	0.0	0.0	38.8	39.4	0.0
211	13227	709.3	0.0	120.7	50.5	111.5	139.2	129.1	148.5	130.5
212	10387	529.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
213	9874	585.0	0.0	91.9	56.7	49.3	95.4	101.8	101.1	180.6
214	4587	227.1	0.0	0.0	0.0	0.0	58.1	51.2	63.6	54.1
215	12929	633.9	0.0	0.0	57.6	84.0	140.2	118.4	139.9	93.6
216	17925	786.8	0.0	87.9	50.6	82.0	92.6	137.9	90.0	161.3
217	8669	335.6	0.0	124.3	51.3	0.0	22.1	33.6	75.8	152.8
Total	**80519**	**3903.2**	**0.0**	**424.8**	**284.6**	**326.9**	**547.7**	**610.7**	**658.3**	**773.1**

Empire District Totals	**172547**	**5501.1**	**119.3**	**678.1**	**648.8**	**709.7**	**832.9**	**864.0**	**1108.4**	**1155.9**

Company Totals

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
209	20042	352.7	41.2	38.5	91.4	66.5	78.0	77.3	113.1	66.5
211	21086	816.2	19.9	142.4	77.8	149.5	159.1	150.7	175.8	168.5
212	17021	820.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
213	17829	746.7	20.2	127.3	117.9	94.2	115.6	137.2	162.3	225.6
214	32011	581.7	14.8	102.3	71.7	82.0	156.7	153.5	173.3	136.2
215	22692	802.2	0.0	35.2	113.7	139.6	161.7	153.7	217.5	149.2
216	22812	886.4	0.0	87.9	80.8	106.1	116.4	137.9	120.3	185.4
217	19054	494.8	23.2	144.5	95.4	71.7	45.3	53.8	146.1	224.6
Total	**172547**	**5501.1**	**119.3**	**678.1**	**648.8**	**709.7**	**832.9**	**864.0**	**1108.4**	**1155.9**

Company Percentages/Year

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
209	20042	6.4%	34.6%	5.7%	14.1%	9.4%	9.4%	8.9%	10.2%	5.7%
211	21086	14.8%	16.7%	21.0%	12.0%	21.1%	19.1%	17.4%	15.9%	14.6%
212	17021	14.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
213	17829	13.6%	16.9%	18.8%	18.2%	13.3%	13.9%	15.9%	14.6%	19.5%
214	32011	10.6%	12.4%	15.1%	11.1%	11.6%	18.8%	17.8%	15.6%	11.8%
215	22692	14.6%	0.0%	5.2%	17.5%	19.7%	19.4%	17.8%	19.6%	12.9%
216	22812	16.1%	0.0%	13.0%	12.5%	15.0%	14.0%	16.0%	10.9%	16.0%
217	19054	9.0%	19.5%	21.3%	14.7%	10.1%	5.4%	6.2%	13.2%	19.4%
Total	**172547**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

East/West Totals

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
East	78011	2410.4	104.5	452.7	382.6	381.9	398.1	419.0	597.3	685.1
West	94536	3090.7	14.8	225.4	266.3	327.8	434.8	445.1	511.1	470.8
Total	**172547**	**5501.1**	**119.3**	**678.1**	**648.8**	**709.7**	**832.9**	**864.0**	**1108.4**	**1155.9**

State Totals

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
MO	150483	4486.8	119.3	678.1	648.8	709.7	832.9	864.0	1108.4	1155.9
KS	10387	530	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OK	7197	312.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AR	4480	172	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**172547**	**5501.1**	**119.3**	**678.1**	**648.8**	**709.7**	**832.9**	**864.0**	**1108.4**	**1155.9**

State 4 Year Midcycle Totals

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
MO	85394	1307.0	119.3	253.3	364.3	382.9	285.2	253.3	450.1	382.9
KS	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OK	7197	312.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AR	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**92591**	**1619.3**	**119.3**	**253.3**	**364.3**	**382.9**	**285.2**	**253.3**	**450.1**	**382.9**

State 6 Year Midcyle Totals

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
MO	65089	3179.9	0.0	424.8	284.6	326.9	547.7	610.7	658.3	773.1
KS	10387	529.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OK	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AR	4480	172.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**79956**	**3881.9**	**0.0**	**424.8**	**284.6**	**326.9**	**547.7**	**610.7**	**658.3**	**773.1**

State 4 Year Midcyle Running Percentage for that State

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
MO	85394	1307.0	9.1%	28.5%	56.4%	85.7%	107.5%	126.9%	152.2%	162.1%
KS	0	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OK	7197	312.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AR	0	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**92591**	**1619.3**	**9.1%**	**28.5%**	**56.4%**	**85.7%**	**107.5%**	**126.9%**	**152.2%**	**162.1%**

State 6 Year Midcycle Running Percentage for that State

Area	Total Meters	Total Miles	2010 Miles Scheduled	2011 Miles Scheduled	2012 Miles Scheduled	2013 Miles Scheduled	2014 Miles Scheduled	2015 Miles Scheduled	2016 Miles Scheduled	2017 Miles Scheduled
MO	65089	3179.9	0.0%	13.4%	22.3%	32.6%	49.8%	69.0%	89.7%	100.7%
KS	10387	529.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OK	0	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AR	4480	172.4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**79956**	**3881.9**	**0.0%**	**13.4%**	**22.3%**	**32.6%**	**49.8%**	**69.0%**	**89.7%**	**100.7%**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
3121	209	312	MO	1053	16.5	59.1	4	16.5	0.0	0.0	0.0	16.5	0.0	0.0	0.0
3311	209	331	MO	635	8.9	39.3	4	0.0	0.0	8.9	0.0	0.0	0.0	8.9	0.0
3312	209	331	MO	17	4.1	3.6	4	0.0	0.0	4.1	0.0	0.0	0.0	4.1	0.0
3313	209	331	MO	486	5.7	39.7	4	0.0	0.0	0.0	5.7	0.0	0.0	0.0	5.7
3314	209	331	MO	207	6.0	29.2	4	0.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0
3315	209	331	MO	1032	26.1	32.9	4	0.0	0.0	26.1		0.0	0.0	26.1	
3871	209	387	MO	1215	11.2	83.3	4	0.0	0.0	11.2	0.0	0.0	0.0	11.2	0.0
3872	209	387	MO	896	11.5	68.0	4	11.5	0.0	0.0	0.0	11.5	0.0	0.0	0.0
3873	209	387	MO	1815	32.5	45.1	4		32.5	0.0	0.0		32.5	0.0	0.0
3874	209	387	MO	186	3.4	28.7	4	0.0	0.0	0.0	3.4	0.0	0.0	0.0	3.4
4101	209	410	MO	553	13.2	33.5	4	13.2	0.0	0.0	0.0	13.2	0.0	0.0	0.0
4102	209	410	MO	800	15.5	38.3	4	0.0	0.0	0.0	15.5	0.0	0.0	0.0	15.5
4131	209	413	MO	179	4.9	26.5	4	0.0	0.0	4.9		0.0	0.0	4.9	
4132	209	413	MO	408	4.9	66.2	4	0.0	0.0	4.9		0.0	0.0	4.9	
4133	209	413	MO	298	6.1	28.1	4	0.0	0.0	0.0	6.1	0.0	0.0	0.0	6.1
4134	209	413	MO	782	8.2	51.5	4	0.0	0.0	8.2		0.0	0.0	8.2	
4135	209	413	MO	61	1.3	20.8	4	0.0	0.0	0.0		1.3	0.0	0.0	
4136	209	413	MO	601	2.5	85.6	4	0.0	0.0	0.0		2.5	0.0	0.0	
4137	209	413	MO	719	9.3	67.3	4	0.0	0.0	0.0		9.3	0.0	0.0	
4138	209	413	MO	694	11.4	55.2	4	0.0	0.0	0.0	11.4	0.0	0.0	0.0	11.4
4331	209	433	MO	273	8.3	20.4	4	0.0	0.0	0.0	8.3	0.0	0.0	0.0	8.3
4332	209	433	MO	203	3.6	35.5	4	0.0	0.0	0.0	3.6	0.0	0.0	0.0	3.6
4333	209	433	MO	389	5.4	31.9	4	0.0	0.0	5.4		0.0	0.0	5.4	
4334	209	433	MO	377	4.6	52.7	4	0.0	0.0	0.0		4.6	0.0	0.0	
4381	209	438	MO	208	12.4	9.5	4	0.0	0.0	0.0	12.4	0.0	0.0	0.0	12.4
4383	209	438	MO	319	9.3	24.7	4	0.0	0.0	0.0		9.3	0.0	0.0	
4385	209	438	MO	1090	6.8	62.7	4	0.0	0.0	0.0		6.8	0.0	0.0	
4386	209	438	MO	1625	3.0	120.4	4	0.0	0.0	0.0		3.0	0.0	0.0	
Total				**17121**	**256.7**			**41.2**	**38.5**	**73.7**	**66.5**	**78.0**	**38.5**	**73.7**	**66.5**
2951	209	295	MO	1268	39.4	29.9	6	0.0	0.0	0.0	0.0	0.0	0.0	39.4	0.0
2952	209	295	MO	140	8.3	15.8	6	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0
3122	209	312	MO	818	29.6	24.3	6	0.0	0.0	0.0	0.0	0.0	29.6	0.0	0.0
3123	209	312	MO	670	17.7	31.8	6	0.0	0.0	17.7	0.0	0.0	0.0	0.0	0.0
4561	209	456	MO	25	0.9	3.2	6	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Total				**2921**	**96.0**			**0.0**	**0.0**	**17.7**	**0.0**	**0.0**	**38.8**	**39.4**	**0.0**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
1242	211	124	MO	663	7.2	88.8	4	0.0	7.2		0.0	0.0	7.2	0.0	0.0
1243	211	124	MO	974	17.1	52.6	4	0.0	0.0	17.1	0.0	0.0	0.0	17.1	0.0
2211	211	221	MO	721	19.9	35.5	4	19.9	0.0	0.0	0.0	19.9	0.0	0.0	0.0
3551	211	355	MO	1005	10.2	82.2	4	0.0	0.0	10.2	0.0	0.0	0.0	10.2	0.0
3591	211	359	MO	984	15.8	45.6	4	0.0	0.0	0.0	15.8	0.0	0.0	0.0	15.8
3593	211	359	MO	986	5.3	98.4	4	0.0	5.3	0.0	0.0	0.0	5.3	0.0	0.0
3594	211	359	MO	524	9.2	39.2	4	0.0	9.2	0.0	0.0	0.0	9.2	0.0	0.0
4511	211	451	MO	1546	18.4	55.2	4	0.0	0.0	0.0	18.4	0.0	0.0	0.0	18.4
4512	211	451	MO	0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4513	211	451	MO	456	3.8	39.1	4	0.0	0.0	0.0	3.8	0.0	0.0	0.0	3.8
Total				**7859.0**	**106.9**			**19.9**	**21.7**	**27.3**	**38.0**	**19.9**	**21.7**	**27.3**	**38.0**
1241	211	124	MO	831	28.8	26.7	6	0.0	0.0	0.0		0.0	28.8	0.0	0.0
1521	211	152	MO	1560	105.3	14.6	6	0.0	0.0	0.0	0.0	0.0	0.0	105.3	0.0
1522	211	152	MO	138	16.1	8.3	6	0.0	0.0	0.0	0.0	0.0	16.1	0.0	0.0
1523	211	152	MO	697	54.0	12.7	6	0.0	0.0	0.0		54.0	0.0	0.0	0.0
2051	211	205	MO	210	21.3	9.9	6	0.0	0.0	0.0	0.0	0.0	21.3	0.0	0.0
2052	211	205	MO	440	18.8	23.4	6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0
2212	211	221	MO	1097	48.6	19.8	6	0.0	48.6	0.0	0.0	0.0	0.0	0.0	48.6
2622	211	262	MO	111	12.0	9.1	6	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0
3552	211	355	MO	550	17.3	29.9	6	0.0	0.0	0.0	0.0	17.3	0.0	0.0	0.0
3553	211	355	MO	949	49.2	19.0	6	0.0	0.0	0.0	0.0	49.2	0.0	0.0	0.0
3592	211	359	MO	1534	50.5	27.9	6	0.0	0.0	50.5	0.0	0.0	0.0	0.0	0.0
3621	211	362	MO	1135	72.1	15.4	6	0.0	72.1	0.0	0.0	0.0	0.0	0.0	72.1
3901	211	390	MO	862	29.9	27.9	6	0.0	0.0	0.0	0.0	0.0	0.0	29.9	0.0
3902	211	390	MO	93	9.9	9.1	6	0.0	0.0	0.0	0.0		0.0	0.0	9.9
3903	211	390	MO	276	13.3	20.3	6	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0
4371	211	437	MO	2169	111.5	19.0	6	0.0		0.0	111.5	0.0	0.0	0.0	0.0
4372	211	437	MO	575	50.8	10.7	6	0.0	0.0	0.0	0.0		50.8	0.0	0.0
Total				**13227.0**	**709.3**			**0.0**	**120.7**	**50.5**	**111.5**	**139.2**	**129.1**	**148.5**	**130.5**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Of UG	Total Miles	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
1861	212	186	OK	711	34.6	0.2	34.8	20.4	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2712	212	271	OK	1169	54.5	0.1	54.6	21.4	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2912	212	291	OK	714	25.0	0.5	25.4	28.1	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3631	212	363	OK	1233	61.7	0.5	62.1	19.8	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3771	212	377	OK	1086	66.0	0.4	66.4	16.4	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3772	212	377	OK	10	1.4	0.3	1.7	5.8	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3773	212	377	OK	119	17.2	0.0	17.2	6.9	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3811	212	381	OK	859	13.0	0.1	13.1	65.7	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3812	212	381	OK	720	16.0	0.1	16.0	44.9	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4281	212	428	OK	13	1.6	0.2	1.8	7.2	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total				**6634.0**	**290.9**					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
6601	212	66	KS	787	49.4	0.0	49.4	15.9	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6602	212	66	KS	499	20.1	0.0	20.1	24.8	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2711	212	271	KS	237	59.3	0.2	59.6	4.0	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2781	212	278	KS	1	0.6	0.0	0.6	1.6	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2782	212	278	KS	1457	53.7	0.9	54.6	26.7	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2783	212	278	KS	1119	44.7	0.4	45.1	24.8	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2821	212	282	KS	424	9.6	0.3	9.9	42.8	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2822	212	282	KS	374	6.7	0.1	6.8	54.7	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2823	212	282	KS	524	25.1	0.3	25.4	20.6	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2824	212	282	KS	923	15.0	2.3	17.3	53.3	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2911	212	291	KS	1194	61.6	0.0	61.6	19.4	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2913	212	291	KS	879	12.8	0.0	12.8	68.7	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2914	212	291	KS	544	16.6	0.5	17.1	31.9	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2991	212	299	KS	1	0.4	0.0	0.4	2.6	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3391	212	339	KS	13	2.3	0.1	2.4	5.5	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4061	212	406	KS	1220	113.1	1.0	114.2	10.7	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4062	212	406	KS	4	2.1	0.0	2.1	1.9	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4251	212	425	KS	185	36.0	0.0	36.0	5.1	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4441	212	444	KS	2	0.4	0.1	0.5	4.1	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total				**10387.0**	**529.6**					**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
3671	213	367	MO	1058	13.9	63.2	4	0.0	0.0		13.9	0.0	0.0	0.0	13.9
3672	213	367	MO	145	1.8	79.2	4	0.0	0.0		1.8	0.0	0.0	0.0	1.8
3673	213	367	MO	257	19.9	11.9	4	0.0	0.0	19.9		0.0	0.0	19.9	
3674	213	367	MO	0	0.0	0.0	4	0.0	0.0	0.0		0.0	0.0	0.0	
3675	213	367	MO	414	4.8	62.7	4	0.0	4.8		0.0	0.0	4.8	0.0	0.0
4091	213	409	MO	1105	20.2	48.7	4	20.2	0.0	0.0	0.0	20.2	0.0	0.0	0.0
4182	213	418	MO	930	21.8	39.4	4	0.0	0.0	21.8	0.0	0.0	0.0	21.8	0.0
4311	213	431	MO	964	9.1	84.1	4	0.0	0.0		9.1	0.0	0.0	0.0	9.1
4312	213	431	MO	1412	30.6	32.7	4	0.0	30.6		0.0	0.0	30.6	0.0	0.0
4313	213	431	MO	0	0.0	0.0	4	0.0	0.0	0.0		0.0	0.0	0.0	
6021	213	602	MO	597	19.5	27.1	4	0.0		19.5	0.0	0.0	0.0	19.5	0.0
6022	213	602	MO	400	4.5	79.7	4	0.0	0.0	0.0	4.5	0.0	0.0	0.0	4.5
6143	213	614	MO	363	8.8	41.2	4	0.0	0.0	0.0	8.8	0.0	0.0	0.0	8.8
6144	213	614	MO	310	7.0	44.4	4	0.0	0.0		7.0	0.0	0.0	0.0	7.0
Total				**7955.0**	**161.7**			**20.2**	**35.4**	**61.2**	**45.0**	**20.2**	**35.4**	**61.2**	**45.0**
2091	213	209	MO	815	56.7	14.3	6	0.0	0.0	56.7	0.0	0.0	0.0	0.0	0.0
2092	213	209	MO	820	32.0	25.4	6	0.0	32.0	0.0	0.0	0.0	0.0	0.0	32.0
2171	213	217	MO	510	30.6	16.5	6	0.0	0.0	0.0	0.0	30.6	0.0	0.0	0.0
2172	213	217	MO	207	34.4	6.0	6	0.0	0.0	0.0	0.0	34.4	0.0	0.0	0.0
2491	213	249	MO	60	14.5	4.2	6	0.0	0.0	0.0	0.0	0.0	14.5	0.0	0.0
2501	213	250	MO	77	4.2	17.9	6	0.0	0.0	0.0	0.0	4.2		0.0	0.0
2511	213	251	MO	592	22.5	26.1	6	0.0	0.0	0.0	0.0	0.0	0.0	22.5	0.0
2621	213	262	MO	1094	88.7	12.3	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.7
3041	213	304	MO	76	3.1	24.8	6	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0
3081	213	308	MO	549	28.4	19.3	6	0.0	0.0	0.0	0.0	0.0		28.4	0.0
3082	213	308	MO	320	11.2	28.6	6	0.0	0.0	0.0	0.0	0.0		11.2	0.0
3181	213	318	MO	686	49.3	13.8	6	0.0	0.0	0.0	49.3	0.0	0.0	0.0	0.0
3231	213	323	MO	357	18.7	19.0	6	0.0	0.0	0.0	0.0	0.0		18.7	0.0
3232	213	323	MO	422	18.8	21.3	6	0.0	0.0	0.0	0.0	0.0	18.8		0.0
3421	213	342	MO	624	25.0	24.1	6	0.0	25.0	0.0	0.0	0.0	0.0	0.0	25.0
3422	213	342	MO	950	35.0	25.6	6	0.0	35.0	0.0	0.0	0.0	0.0	0.0	35.0
4092	213	409	MO	386	26.2	14.4	6	0.0	0.0	0.0	0.0	26.2	0.0	0.0	0.0
4181	213	418	MO	453	20.3	20.8	6	0.0	0.0	0.0	0.0	0.0	0.0	20.3	0.0
6141	213	614	MO	876	65.4	13.0	6	0.0	0.0	0.0	0.0	0.0	65.4	0.0	0.0
Total				**9874.0**	**585.0**			**0.0**	**91.9**	**56.7**	**49.3**	**95.4**	**101.8**	**101.1**	**180.6**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
1225	214	59	MO	931	7.5	121.5	4	0.0	7.5		0.0	0.0	7.5		0.0
1226	214	59	MO	339	3.7	80.7	4	0.0		3.7	0.0	0.0		3.7	0.0
1227	214	59	MO	1164	19.3	57.3	4	0.0	0.0	0.0	0.0	19.3	0.0		0.0
1228	214	59	MO	491	4.1	117.3	4	0.0		4.1	0.0	0.0		4.1	0.0
1229	214	59	MO	1972	13.1	149.9	4	0.0	13.1	0.0	0.0	0.0	13.1		0.0
401	214	64	MO	102	0.7	133.1	4	0.0	0.0	0.0	0.0	0.7	0.0		0.0
402	214	64	MO	107	1.9	57.6	4	0.0	0.0	0.0	0.0	1.9	0.0		0.0
403	214	64	MO	254	2.7	95.2	4	0.0	0.0	0.0	0.0	2.7	0.0		0.0
404	214	64	MO	166	1.2	131.4	4	0.0	0.0	0.0	0.0	1.2	0.0		0.0
405	214	64	MO	43	0.5	71.8	4	0.0	0.0	0.0	0.0	0.5	0.0		0.0
406	214	64	MO	70	0.7	103.5	4	0.0	0.0	0.0	0.0	0.7	0.0		0.0
407	214	64	MO	98	0.9	103.6	4	0.0	0.0	0.0	0.0	0.9	0.0		0.0
432	214	100	MO	83	1.0	76.8	4	0.0	0.0	0.0	0.0	1.0	0.0		0.0
433	214	100	MO	40	0.6	71.0	4	0.0	0.0	0.0	0.0	0.6	0.0		0.0
434	214	100	MO	28	0.7	35.4	4	0.0	0.0	0.0	0.0	0.7	0.0		0.0
1451	214	145	MO	481	11.2	38.8	4	0.0			11.2	0.0			11.2
1453	214	145	MO	1762	20.4	84.1	4	0.0	20.4			0.0	20.4		
1454	214	145	MO	892	14.2	61.8	4	0.0			14.2				14.2
1455	214	145	MO	505	7.9	60.9	4	0.0			7.9	0.0			7.9
1261	214	258	MO	396	4.0	82.2	4	0.0	0.0	0.0	0.0	4.0	0.0		0.0
1262	214	258	MO	198	5.4	35.8	4	0.0	0.0	5.4	0.0	0.0	0.0	5.4	0.0
1263	214	258	MO	1364	14.8	89.0	4	14.8	0.0	0.0	0.0	14.8	0.0		0.0
1264	214	258	MO	41	3.8	10.0	4	0.0	0.0	0.0	0.0	3.8	0.0		0.0
1265	214	258	MO	1209	9.7	86.6	4	0.0	0.0	9.7	0.0	0.0	0.0	9.7	0.0
1267	214	258	MO	70	3.3	16.0	4	0.0	0.0	0.0	3.3	0.0	0.0		3.3
451	214	284	MO	0	0.4	0.0	4	0.0	0.0	0.0	0.0	0.4	0.0		0.0
452	214	284	MO	0	0.1	0.0	4	0.0	0.0	0.0	0.0	0.1	0.0		0.0
453	214	284	MO	126	1.0	124.0	4	0.0	0.0	0.0	0.0	1.0	0.0		0.0
454	214	284	MO	102	1.7	59.9	4	0.0	0.0	0.0	0.0	1.7	0.0		0.0
455	214	284	MO	73	0.7	79.1	4	0.0	0.0	0.0	0.0	0.7	0.0		0.0
456	214	284	MO	45	0.5	66.9	4	0.0	0.0	0.0	0.0	0.5	0.0		0.0
457	214	284	MO	0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0		0.0
1273	214	341	MO	863	8.6	93.3	4	0.0	8.6	0.0	0.0	0.0	8.6		0.0
1274	214	341	MO	8	2.0	3.9	4	0.0	0.0	0.0	0.0	2.0	0.0		0.0
1281	214	360	MO	81	1.9	22.0	4	0.0	0.0	1.9	0.0	0.0	0.0	1.9	0.0
1282	214	360	MO	891	12.3	66.0	4	0.0	12.3	0.0	0.0	0.0	12.3		0.0
1283	214	360	MO	363	1.8	48.7	4	0.0	0.0	0.0	0.0	1.8	0.0		0.0

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
1284	214	360	MO	663	9.1	68.2	4	0.0	9.1	0.0	0.0	0.0	9.1		0.0
1285	214	360	MO	1126	6.0	71.4	4	0.0	0.0	6.0	0.0	0.0	0.0	6.0	0.0
1286	214	360	MO	43	1.3	16.8	4	0.0	0.0	0.0	0.0	1.3	0.0		0.0
1287	214	360	MO	1	0.3	2.5	4	0.0	0.0	0.0	0.0	0.3	0.0		0.0
1230	214	372	MO	1131	12.4	90.7	4	0.0	0.0	0.0	0.0	12.4	0.0		0.0
1231	214	372	MO	3	0.2	16.6	4	0.0	0.0	0.0	0.0	0.2	0.0		0.0
1232	214	372	MO	1143	14.5	75.7	4	0.0	0.0	14.5	0.0	0.0	0.0	14.5	0.0
1233	214	372	MO	629	4.9	127.0	4	0.0	0.0	0.0	0.0	4.9	0.0		0.0
3911	214	391	MO	6	0.4	5.0	4	0.0	0.0	0.0	0.0	0.4	0.0		0.0
3912	214	391	MO	1118	15.6	54.7	4	0.0	0.0	15.6	0.0	0.0	0.0	15.6	0.0
3914	214	391	MO	676	38.0	15.8	4	0.0	0.0	0.0	38.0		0.0	38.0	38.0
4222	214	422	MO	1533	10.9	114.1	4	0.0	0.0	10.9	0.0	0.0	0.0	10.9	0.0
4223	214	422	MO	1207	10.6	91.3	4	0.0	10.6		0.0	0.0	10.6		0.0
4224	214	422	MO	625	7.5	60.9	4	0.0	0.0	0.0	7.5	0.0	0.0		7.5
4301	214	430	MO	606	4.5	85.8	4	0.0	0.0	0.0	0.0	4.5	0.0		0.0
4302	214	430	MO	640	10.4	36.8	4	0.0			0.0	10.4			0.0
4303	214	430	MO	767	20.6	26.7	4	0.0	20.6	0.0	0.0	0.0	20.6		0.0
4304	214	430	MO	130	1.3	39.8	4	0.0	0.0	0.0	0.0	1.3	0.0		0.0
4471	214	447	MO	5	0.8	3.9	4	0.0	0.0	0.0	0.0	0.8	0.0		0.0
4472	214	447	MO	14	1.0	11.5	4	0.0	0.0	0.0	0.0	1.0	0.0		0.0
Total				**27424.0**	**354.6**			**14.8**	**102.3**	**71.7**	**82.0**	**98.6**	**102.3**	**109.7**	**82.0**
1452	214	145	MO	397	19.9	18.9	6	0.0	0.0	0.0	0.0		0.0	19.9	
145D	214	145	MO	1	0.1	6.5	6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
1271	214	341	MO	874	42.3	20.3	6	0.0	0.0	0.0	0.0	0.0	0.0	42.3	
1272	214	341	MO	13	1.2	6.9	6	0.0	0.0	0.0	0.0	0.0	0.0	1.2	
3891	214	389	MO	392	26.9	13.8	6	0.0	0.0	0.0	0.0	26.9	0.0	0.0	
3892	214	389	MO	1193	51.2	16.7	6	0.0	0.0	0.0		0.0	51.2	0.0	
3913	214	391	MO	1258	54.1	19.3	6	0.0	0.0	0.0	0.0		0.0	0.0	54.1
4221	214	422	MO	459	31.2	13.3	6	0.0	0.0	0.0	0.0	31.2	0.0	0.0	
Total				**4587.0**	**227.1**			**0.0**	**0.0**	**0.0**	**0.0**	**58.1**	**51.2**	**63.6**	**54.1**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
1050	215	105	MO	1381	14.7	90.1	4	0.0	0.0	14.7	0.0	0.0	0.0	14.7	0.0
1051	215	105	MO	1018	17.0	54.2	4	0.0	17.0	0.0	0.0	0.0	17.0	0.0	0.0
1052	215	105	MO	0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1094	215	109	MO	968	24.5	0.0	4	0.0	0.0	24.5	0.0	0.0	0.0	24.5	0.0
1101	215	110	MO	0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1102	215	110	MO	589	11.6	40.2	4	0.0	0.0	0.0	0.0	11.6	0.0	0.0	0.0
1103	215	110	MO	839	18.3	43.5	4	0.0	18.3	0.0	0.0	0.0	18.3	0.0	0.0
3661	215	366	MO	1064	20.6	0.0	4	0.0	0.0	0.0	20.6	0.0	0.0	0.0	20.6
4321	215	432	MO	4	0.6	4.4	4	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
4322	215	432	MO	85	1.8	32.8	4	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0
4323	215	432	MO	0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4324	215	432	MO	979	16.8	47.0	4	0.0	0.0	16.8	0.0	0.0	0.0	16.8	0.0
4361	215	436	MO	1420	21.6	64.0	4	0.0	0.0		21.6	0.0	0.0	21.6	21.6
4362	215	436	MO	774	7.3	100.4	4	0.0	0.0			7.3	0.0	0.0	
4363	215	436	MO	642	13.5	40.0	4	0.0	0.0		13.5	0.0	0.0	0.0	13.5
Total				**9763.0**	**168.3**			**0.0**	**35.2**	**56.0**	**55.6**	**21.4**	**35.2**	**77.6**	**55.6**
1081	215	108	MO	20	4.3	4.5	6	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0
1082	215	108	MO	1252	118.6	10.5	6	0.0	0.0	0.0	0.0		0.0	118.6	0.0
1083	215	108	MO	1	1.3	0.7	6	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
1084	215	108	MO	5	1.2	4.2	6	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
1091	215	109	MO	1545	93.6	15.9	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.6
1092	215	109	MO	1111	37.6	25.5	6	0.0	0.0	0.0	0.0	37.6			0.0
1093	215	109	MO	206	8.1	24.4	6	0.0	0.0	0.0	0.0		0.0	8.1	0.0
2492	215	249	MO	29	6.5	4.5	6	0.0	0.0	0.0	0.0		0.0	6.5	0.0
3662	215	366	MO	1022	58.2	16.7	6	0.0	0.0	0.0			58.2	0.0	0.0
3663	215	366	MO	267	28.8	9.3	6	0.0	0.0	0.0	0.0	0.0	28.8	0.0	0.0
3951	215	395	MO	1041	46.0	21.6	6	0.0	0.0	0.0	0.0	46.0	0.0	0.0	0.0
3952	215	395	MO	360	33.9	9.8	6	0.0	0.0	0.0		33.9	0.0	0.0	0.0
4031	215	403	MO	620	22.7	26.9	6	0.0	0.0	0.0		22.7	0.0	0.0	0.0
4171	215	417	MO	1071	31.4	31.3	6	0.0	0.0	0.0	0.0	0.0	31.4	0.0	0.0
4172	215	417	MO	2140	57.6	31.0	6	0.0	0.0	57.6	0.0	0.0	0.0	0.0	0.0
4211	215	421	MO	1472	59.7	23.0	6	0.0	0.0		59.7	0.0	0.0	0.0	0.0
4212	215	421	MO	767	24.3	30.5	6	0.0	0.0	0.0	24.3	0.0	0.0	0.0	0.0
Total				**12929.0**	**633.9**			**0.0**	**0.0**	**57.6**	**84.0**	**140.2**	**118.4**	**139.9**	**93.6**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
5601	216	56	MO	77	2.9	26.3	4	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0
5602	216	56	MO	479	10.0	47.8	4	0.0	0.0	0.0	10.0	0.0	0.0	0.0	10.0
5641	216	56	MO	403	3.2	125.4	4	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0
5642	216	56	MO	205	1.9	105.1	4	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0
2961	216	296	MO	1643	30.2	47.6	4	0.0	0.0	30.2	0.0	0.0	0.0	30.2	0.0
2962	216	296	MO	238	6.8	30.6	4	0.0	0.0	0.0	6.8	0.0	0.0	0.0	6.8
2963	216	296	MO	1	0.3	3.1	4	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
3752	216	375	OK	563	21.4	26.1	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3982	216	398	MO	718	7.3	95.1	4	0.0	0.0	0.0	7.3	0.0	0.0	0.0	7.3
4142	216	414	MO	560	15.5	35.6	4	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0
Total				**4887.0**	**99.6**			**0.0**	**0.0**	**30.2**	**24.1**	**23.9**	**0.0**	**30.2**	**24.1**
5603	216	56	MO	1176	41.2	27.2	6	0.0	0.0	0.0	0.0	41.2	0.0	0.0	0.0
1311	216	131	MO	238	22.9	10.4	6	0.0	0.0	0.0	0.0	0.0	0.0	22.9	0.0
1312	216	131	MO	873	49.1	17.5	6	0.0	0.0	0.0	0.0	0.0	49.1	0.0	0.0
1841	216	184	MO	1497	50.6	26.5	6	0.0	0.0	50.6	0.0	0.0	0.0	0.0	0.0
1842	216	184	MO	192	15.6	11.8	6	0.0	0.0	0.0	0.0	0.0	0.0	15.6	0.0
1843	216	184	MO	1027	42.8	23.5	6	0.0	42.8	0.0	0.0	0.0	0.0	0.0	42.8
3221	216	322	MO	1162	33.5	33.8	6	0.0	0.0	0.0	0.0	0.0	33.5	0.0	0.0
3222	216	322	MO	936	32.0	29.0	6	0.0	0.0	0.0	32.0	0.0	0.0	0.0	0.0
3261	216	326	AR	266	7.1	34.4	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3262	216	326	AR	36	1.0	36.8	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3263	216	326	AR	111	16.1	6.8	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3471	216	347	MO	156	16.3	9.6	6	0.0	0.0	0.0	0.0	0.0	0.0	16.3	0.0
3472	216	347	MO	1464	51.3	27.9	6	0.0	0.0	0.0	0.0	51.3	0.0	0.0	0.0
3751	216	375	MO	1112	50.1	20.8	6	0.0	0.0	0.0	50.1	0.0	0.0	0.0	0.0
3921	216	392	AR	427	12.1	35.1	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3922	216	392	AR	1703	54.2	30.1	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3923	216	392	AR	1	4.2	0.2	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3981	216	398	MO	1236	72.9	16.8	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.9
3991	216	399	MO	658	55.3	11.9	6	0.0	0.0	0.0	0.0	0.0	55.3	0.0	0.0
3992	216	399	MO	160	8.4	19.0	6	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0
4141	216	414	MO	86	13.8	6.0	6	0.0	0.0	0.0	0.0	0.0	0.0	13.8	0.0
4431	216	443	MO	1265	45.1	26.6	6	0.0	45.1	0.0	0.0	0.0	0.0	0.0	45.1
4432	216	443	MO	206	13.0	15.9	6	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0
4433	216	443	MO	1	0.5	1.4	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
7001	216	700	AR	1276	50.3	24.3	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7002	216	700	AR	660	27.4	23.9	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total				**17925.0**	**786.8**			**0.0**	**87.9**	**50.6**	**82.0**	**92.6**	**137.9**	**90.0**	**161.3**

Empire District Electric

Midcycle Vegetation Management

Circuit ID	Area	Sub	State	Total Meters	Miles Of OH	Customers /Mile	Maint. Schedule	2010 Planned	2011 Planned	2012 Planned	2013 Planned	2014 Planned	2015 Planned	2016 Planned	2017 Planned
1141	217	114	MO	864	12.0	53.9	4	12.0	0.0	0.0	0.0	12.0	0.0	0.0	0.0
3301	217	330	MO	200	2.6	77.0	4	0.0	2.6	0.0	0.0	0.0	2.6	0.0	0.0
3302	217	330	MO	607	11.2	43.3	4	11.2	0.0	0.0	0.0	11.2	0.0	0.0	0.0
3303	217	330	MO	0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3304	217	330	MO	942	10.6	64.9	4	0.0	0.0	0.0	10.6	0.0	0.0	0.0	10.6
3305	217	330	MO	8	0.4	12.2	4	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0
3702	217	370	MO	601	11.9	42.4	4	0.0	0.0	0.0	11.9	0.0	0.0	0.0	11.9
4151	217	415	MO	1091	23.0	39.2	4	0.0	0.0	0.0	23.0	0.0	0.0	0.0	23.0
4152	217	415	MO	803	18.1	32.1	4	0.0	0.0	18.1	0.0	0.0	0.0	18.1	0.0
4153	217	415	MO	1012	17.6	39.2	4	0.0	17.6	0.0	0.0	0.0	17.6	0.0	0.0
4154	217	415	MO	951	6.8	45.6	4	0.0	0.0	6.8	0.0	0.0	0.0	6.8	0.0
4155	217	415	MO	1692	18.8	43.1	4	0.0	0.0	18.8	0.0	0.0	0.0	18.8	0.0
4156	217	415	MO	0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4342	217	434	MO	1614	26.3	48.1	4	0.0	0.0	0.0	26.3	0.0	0.0	26.3	26.3
Total				**10385**	**159.2**			**23.2**	**20.2**	**44.0**	**71.7**	**23.2**	**20.2**	**70.3**	**71.7**
8001	217	80	MO	4	0.6	7.2	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
1142	217	114	MO	198	12.5	12.9	6	0.0	12.5	0.0	0.0	0.0	0.0	0.0	12.5
1211	217	121	MO	1388	73.7	18.6	6	0.0	73.7	0.0	0.0	0.0	0.0	0.0	73.7
1212	217	121	MO	67	9.7	6.9	6	0.0	9.7	0.0	0.0	0.0	0.0	0.0	9.7
1213	217	121	MO	519	28.4	18.2	6	0.0	28.4	0.0	0.0	0.0	0.0	0.0	28.4
3331	217	333	MO	2	0.5	4.3	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
3691	217	369	MO	1241	51.3	22.2	6	0.0	0.0	51.3	0.0	0.0	0.0	0.0	0.0
3692	217	369	MO	1063	23.8	29.8	6	0.0	0.0	0.0			0.0	23.8	0.0
3693	217	369	MO	527	14.5	34.5	6	0.0	0.0	0.0			14.5	0.0	0.0
3701	217	370	MO	478	22.1	18.5	6	0.0	0.0			22.1	0.0	0.0	0.0
3971	217	397	MO	625	19.0	27.8	6	0.0	0.0	0.0			19.0	0.0	0.0
4341	217	434	MO	1805	51.9	30.4	6	0.0	0.0	0.0	0.0	0.0		51.9	0.0
4343	217	434	MO	752	27.6	23.7	6	0.0	0.0	0.0	0.0	0.0		0.0	27.6
Total				**8669**	**335.6**			**0.0**	**124.3**	**51.3**	**0.0**	**22.1**	**33.6**	**75.8**	**152.8**

Section 1.2

Transmission System

Section 1.2.1

Policy

Title: **Transmission Vegetation Management Program**	Revision: B	Author: Scott Mackey__03/30/2008
Approval Signature(s) and date: **Director of Transmission Policy and Compliance,** **VP of Commercial Operations**		
Applicable NERC Standard(S): FAC003-1		

Definitions

ANSI A300 Standards - A set of standards for tree trimmers pertaining to safety and tree care published by the American National Standards Institute.
Brush – a. Woody stem vegetation declared brush by species designation. **b**. Trees smaller than four inches DBH. **c.** Any vegetation at a height and in a setting manageable by machinery or through herbicide application.
DBH – Diameter at Breast Height, 4 ½ feet above ground level on the uphill side of a tree.
Firewood – All debris resulting from utility line clearing that cannot be chipped by a utility line clearance contractor's average chipper.
IEEE Standard 516-2003 – A reference established by the Institute of Electrical and Electronics Engineers pertaining to maintenance of electrical systems.
ISA - International Society of Arboriculture – A professional group that researches and addresses current tree care practices including needs pertaining to line-clearance work.
Job Coordinator – The individual responsible for notifying property owners and quality control of tree clearing work conducted on rights-of-way.
Make Safe – Cutting down or trimming to a level that is safe for the property owner to have a professional tree trimming company trim or remove the rest of the tree and brush. All resulting debris will be left on site. NESC requires 10 feet if voltage is lower than 50kV.
Qualified Personnel – The manager of Vegetation Control is the position that defines qualified personnel and qualifications are defined in the job description as having a B.S. in Forestry or a closely related field and at least four years experience in electric utility vegetation management.
Notification Period – The amount of time between the date a customer was left notice of tree clearing work on their property to the date work is performed on that site.
Removal - A tree that should be cut down rather than trimmed. Stumps and wood will be left on site. Slash will be chipped onto the site or hauled off.
R/W – Right-of-way – The corridor through which Empire's facility traverses public and private properties.
Stump – The remaining intact portion of a removal.
Slash – a. Forestry term describing the un-merchantable portion of a tree as a result of removal i.e. limbs, leaves, twigs, etc. **b.** All debris resulting from a removal that can be chipped up by tree crews.
Transmission Lines – Empire facility conducting electricity ranging from 34.5kV to 345kV.
Transmission Vegetation Outages – Outages on 34.5kV to 345kV lines caused by vegetation coming in contact with conductors or causing damage to transmission facility. (For details on reporting outages refer to Appendix V of this document.)
Wire-Zone – The R/W area located directly under the conductors.

Objective:

This document is to support continuity in management practices for transmission vegetation control. Empire maintains to be a viable source of reliable electric power in conjunction with other providers on the transmission grid while meeting the needs of its customers. This program shall be guided by qualified personnel as defined by the Human Resources Department's job description for Manager of Vegetation Control and is organized in the Department of Engineering and Line Design of The Empire District Electric Co.

Practices:

The Department of Vegetation Control is dedicated to the implementation of standards and methods for vegetation management as described in this document. Processes are based on current standard practices for the industry and comply with ANSI A-300, and International Society of Arboriculture. Dr. Alex Shigo's "Pruning Trees near Power Lines" should serve as a quick reference guide.

I. System Vegetation Surveys

Aerial surveys are conducted annually during the fall to enable appropriate action for immediate threats to the transmission facility. The documentation of vegetation on Right-of-Way is also used as an aid in developing the workplan for the following year. Ground Surveys are to be conducted on lines determined to have potential danger trees threatening reliability due to inclement weather such as major ice storms, flooding, etc.

II. Vegetation Management Approach

A. Rural Areas:

1. Rural Cross-Country

Transmission line R/W that traverses open or wooded land not a part of a manicured lawn will be maintained, by clearing or spraying intrusive trees and brush as needed, for reliability and access purposes. Trees located outside but that have encroached into the right-of-way will be trimmed back to a proper pruning point at or near the right-of-way edge. Hazard trees off right-of-way should be addressed at the time normal maintenance is conducted in that area. Crews should make the trees safe as this document defines. Trees and brush that are sprayed will not be removed unless deemed necessary by the Transmission Forester for safety or access. Refer to Appendix I for Right-of-way specifics for widths.

2. Rural Road-side

Trees under transmission lines running along county road, state road, and interstate highway "fence row areas" should be sprayed with a properly applied herbicide mix that best meets species control needs and state and federal regulations. Trees along these corridors in lawns or other manicured areas (i.e. parks, golf courses, businesses, etc.) should be handled as indicated in the Rural Residential Areas section. Property issues as a result of this work should be handled on a case by case basis by the job coordinator and property owner.

3. Rural Residential Areas

Trees located in residential areas should be trimmed to meet ANSI A300 Standards while adhering to International Society of Arboriculture specifications and meeting Empires minimum clearance requirements as designated in Appendix II. If the job coordinator determines these requirements cannot be met he/she shall then negotiate for "removal." *(For definition of removal refer to Forward.)*

B. Urban and Suburban Areas:

1. Urban/Suburban Nonresidential

Transmission lines running through nonresidential/unimproved Urban and Suburban areas should be maintained clear of trees and brush located under the lines that could cause outages or impede access to the facility. This condition must be considered with current construction of facility and maximum height and spread of vegetation. Although mechanical and or labor clearing will be used routinely, herbicide use should be considered whenever applicable. Designated R/W should be reclaimed and maintained to full width in these areas. However, the minimum needs for R/W clearing of woody stem vegetation is ten feet outside the "wires-zone."

2. Urban/Suburban Residential/Commercial

Transmission lines running through residential/commercial areas in a town should be maintained by dealing one on one with each property owner to develop an acceptable solution to each issue on site.

a. Tall or Fast re-growth category trees located or growing directly under the lines should be removed.
b. Shrubs and flowers should not be targeted for removal as they are desirable in such settings.
c. Smaller tree species with slow re-growth potential are generally acceptable under the lines, however if determined by the job coordinator unmanageable with trimming the trees should be removed.

Note: Factors to consider in determining residential trees as candidates for removal are:

i. public safety
ii. crew safety
iii. cycle reliability
iv. site quality
v. mature tree height and crown spread
vi. conductor height and sag
vii. wind
viii. topography
ix. other variables

III. Customer Service

A. Notification

1. A reasonable effort to notify property owners should be made for work to be performed on property that is evidently residential and/or manicured. The normal notification period is 7 to 90 days.

B. Complaints

1. Resulting complaints from work conducted on the transmission system should be forwarded to and resolved by the Transmission Forester. Resolution to these complaints should be held to clearance guidelines in this manual.
2. All complaints resulting in contractor negligence will be routed through the Transmission Forester to the responsible contractor's supervisor and should be resolved within 14 days. If the complaint is not resolved within 14 days the Transmission Forester may resolve the complaint and the resulting cost will be credited to Empire from the responsible contract company.

IV. Approved Procedures

A. Residential Sites

1. Notification – A reasonable effort should be made to notify owners with yard trees in need of trimming or removal to clear for transmission lines. A standard "*notification period*" of 7 to 60 days is required. If, due to safety or reliability, the job coordinator declares the vegetation clearing is an emergency situation notification is not necessary. Communication to the property owner should be relayed by the responsible coordinator.

2. Directional Trim – To remove the portion of a tree crown encroaching on or toward utility line while leaving any portion of the crown that will not become an obstruction to the safe delivery of reliable electricity. This trimming shall follow ISA standards on residential sites in an effort to sustain public safety, cyclic conductor clearance, and the health and structural integrity of the tree. As a quick reference guide all crews shall be required to have in their possession and follow "Pruning Trees Near Electric Utility Lines" by Dr. Alex Shigo.

3. Removal – To cut a tree down as low to the ground as possible, usually below a three inch stump. If the lower portion of the trunk has any obstruction or foreign object in it that the saw operator sees as a safety risk the final cut may be made above that obstruction. In either case Empire will not grind out the stump or pay for such services. All slash as defined in the Forward of this document will be chipped up and hauled off site unless otherwise directed. All Firewood will be cut into 16-24 inch lengths and piled near the stump. The residual stump shall be treated with herbicide in an effort to eliminate sprouting. Empire reserves the right to use work above and beyond these work details as a tool in negotiating tree removals advantageous to the company's needs for safety or reliability.

4. Brush Control – Brush control will vary greatly due to many variables including property owner desires. Whenever possible herbicides should be used to control small brush to limit growth and proliferation. When the use of herbicides is not possible lowering the number of stems on site by cutting brush will be acceptable. All stumps shall be treated with herbicide to limit sprouting.

B. Nonresidential Sites

1. Herbicide Use – Vegetation control by proper use of herbicides is the most cost efficient, effective means of control and impacts the site less than other current available means of vegetation control. Herbicide should be used anywhere applicable on nonresidential sites including cross-country, roadside, clear pasture, hay meadows, cash crop fields, fencerows, wooded areas, and railroad beds. This method should become the primary means of vegetation control where possible to promote a reliable transmission system while helping to promote varying herbaceous, grass, and shrub species for cover and food sources to wildlife.

2. Mechanical Clearing – This means of clearing is to be use where herbicide is a desirable means of management but cannot be use due to varying issue including access limitations, surrounding properties, USFS property, R/W details stating no herbicide use, etc.

3. Labor Clearing – This is a conventional type clearing usable on nearly all type settings and due to the costly nature of this type work should be avoided when other tools are available and appropriate.

Appendix I

EDE Right-of-Way
Specifications for Vegetation Control

Appendix I

Right-of-Way Width Specifications for Vegetation Control

Facility Characteristics		Right-of-Way specifics	
Voltage	Construction Type	each side of facility center	Total width
34.5 kV	single pole	25 feet	50 feet
34.5 kV	double pole H-frame	50 feet	100 feet
69 kV	single pole	25 feet	50 feet
69 kV	double pole H-frame	50 feet	100 feet
161 kV	single pole	35 feet	70 feet
161 kV	double pole H-frame	50 feet	100 feet
345 kV	double pole H-frame	75 feet	150 feet

Appendix II

Residential Tree Trimming Clearances for Transmission Voltage Conductors

Side Trim Clearance Specifications for 34.5--69kV lines.

Category I (species w/fast re-growth): 20 feet of separation minimum requirement

Silver Maple	Poplars	Cottonwood
Sugar Maple	Sycamore	Ailanthus
Hackberry	Willows	Sassafras
Mulberry	Walnut	
Locusts	Elms	

Category II (species w/medium re-growth): 16 feet of separation minimum requirement

Pecan	Catalpa	Red Maple
Kentucky Coffee	Hickory	

Bois D' Arc (Osage Orange, hedge)
Red Oaks except Black Jack Oak (pointed lobed leaves)
Trees in moderately stressing conditions

Category III (species w/slow re-growth): 12 feet of separation minimum requirement

Black Jack Oak	Evergreens	Ornamental dwarf tree species

Apples, Pears, other fruit trees
White Oaks (rounded lobed leaves)
Trees in stressing conditions

Side Trim Clearance Specifications for 161--345kV lines.

Category I (species w/fast re-growth): 30 feet of separation minimum requirement

Silver Maple	Poplars	Cottonwood
Sugar Maple	Sycamore	Ailanthus
Hackberry	Willows	Sassafras
Mulberry	Walnut	
Locusts	Elms	

Category II (species w/medium re-growth): 25 feet of separation minimum requirement

Red Oaks except Black Jack Oak (pointed lobed leaves)

Pecan	Catalpa	Red Maple
Kentucky Coffee	Hickory	

Bois D' Arc (Osage Orange, hedge)
Trees in moderately stressing conditions

Category III (species w/slow re-growth): 20 feet of separation minimum requirement

White Oaks (rounded lobed leaves)

Black Jack Oak	Evergreens	Ornamental dwarf tree species

Apples, Pears, and other fruit trees
Trees in stressing conditions

Additional Notes for Side-Trimming Specifications:

1. Consider that these clearances are based upon 4 years of separation for clearing average sites. Higher quality sites will have need for more clearance. Examples of higher quality sites would be river or creek crossings, drainage areas, and other irrigated type sites such as crop fields, livestock ponds, etc.

2. When R/W is defined, full reclamation of that R/W should be cleared. These clearances will be applied primarily to yards or other manicured areas near the R/W.

3. Conductor height in relation to mature canopy height may enable lower clearance needs. Trained job coordinating personnel may make this determination.

4. These are minimum re-growth clearance requirements and ISA standards may require more clearance for physiological or structural vegetation integrity.

5. If these clearances for side-trimming are not attainable due to limiting factors the tree becomes a candidate for removal or other means of control. These issues will have to be addressed individually with regard to property owner wishes.

Appendix III

Minimum Vegetation-to-Conductor Separation Distances for Transmission Voltages

Minimum Vegetation-to-Conductor Separation Distances for Transmission Voltages

Reference IEEE Standard 516-2003 page 20, Table-5 MAID w/o tools in the gap (phase to ground)

Voltages in Kilovolts phase to phase	Distances meters	**USS conversion in feet**
72.5 -- 121	0.75	2.46
138 -- 145	0.9	2.95
161 -- 169	1.05	3.44
230 -- 242	1.57	5.15
345 -- 362	2.88	9.45
500 -- 550	4.48	14.70
765 -- 800	6.24	20.47

Appendix IV

Transmission Danger Tree Response Procedures

Transmission Danger Tree Response Procedures

In the event that field or other Empire District Electric Co personnel or contractors find that in their assessment a tree or other vegetation poses an immediate threat to the reliability of a transmission voltage circuit by causing damage or coming into contact with a conductor the following steps are required for hazard elimination:

1. The individual on site shall report the information to the appropriate Area Manager.
2. The Area Manager should then assess the condition and scope of the work to determine the capability in his area to deal with the situation and act accordingly.
    a. If in his/her assessment they do not have the appropriate capabilities at his/her disposal for immediate remediation of the situation
        i. A call to the Manager of Vegetation Control should be made
        ii. Follow-up documentation by an e-mailed copy of all pertinent information available for quick response to the hazard.
    b. If the Area Manager is able to respond immediately to the hazard only an e-mail of the situation should be sent to the Manager of Vegetation Control.
3. The Manager of Vegetation Control should follow the procedures above with an assessment on site for other potential threats and appropriate action will be taken.
4. If there is any reason the situation cannot be immediately resolved (such as may be due to accessibility or safety issues) the Manager of Vegetation Control shall contact dispatching to inform them of the situation so as to determine necessary steps to avoid an outage by following appropriate system dispatching protocol to avoid an unintended outage.

The purpose of this process is to ensure that all immediate threats to the reliable integrity of the Empire District Electric Co. transmission system are resolved in an efficient manner and documented. Also this can be used as an indicator of many potential areas that may need further attention.

Appendix V

Relay Operations Reporting Procedures

Relay Operations Reporting Procedures

This document contains NERC requirements for reporting relay mis-operations and EDE procedures for gathering information.

The North American Electric Reliability Council (NERC) has issued mandatory reporting requirements concerning mis-operation of protective relaying equipment. Transmission owners must file a report quarterly showing any mis-operation, what was the cause for it, and any remedial action taken to fix it. This is in addition to other requirements for documentation of relay testing procedures, schedule for testing, and date tested.

To meet this requirement, EDE will use the following procedure to monitor and document relay operations.

1. System Operations will monitor the transmission system for any switch or breaker operations at 34kV and above. The list of operations will be sent (Faxed) daily to the Manager of Substation Operations for each operating area and also to Protection & Planning Engineering.

2. It is the responsibility of the Manager of Substation Operations for each area to direct field personnel to gather relay target information, as soon as practical, from substations in their area for operations listed as well as any other system devices that may be involved.
   (Note: Where operations may involve equipment in another area, the Manager should coordinate with the Manager for that area to ensure information is obtained.)

3. Relay information will be provided to Protection & Planning Engineering by entering the required data using a PC, into a database form provided by Engineering or by hard copy form if electronic means are unavailable.

4. Outages suspected to have been caused by vegetation will be reported to the Vegetation Management Department by System Protection and Planning Engineering for notification about and confirmation of possible vegetation outages.

5. Protection & Planning Engineering will track all vegetation outages defined as reportable by Southwest Power Pool and will submit this information to SPP on a quarterly basis.

6. Protection & Planning Engineering will analyze the outage data obtained for mis-operations, check coordination settings, etc. and flag any problems.

7. The System Relay Technicians will investigate any mis-operations and report findings to Protection & Planning Engineering for inclusion in the database.

8. Reports will be prepared and sent to Southwest Power Pool and appropriate personnel within EDE.

Section 1.2.2

Primary Cycle Schedule

Empire District Electric Company

Transmission System -- Vegetation Management

							52.60	341.81	267.50	213.46	211.82	206.01	209.74	211.51
Line #	**NERC**	**KV**	**From -- Expanded**	**To -- Expanded**	**Total Miles**	**EDE Miles**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
345	NERC	345.0	SUB 383 - MONETT	BROOKLINE 345	36.39	22.15				22.15				
ENTERGY	NERC	161.0	SUB 312 - POWERSITE	ENTERGY	0.01	0.01				0.01				
39-1	NERC	69.0	SUB 415 - BLACKHAWK JCT.	KAMO	6.00	6.00				6.00				
81-0	NERC	161.0	SUB 94 - COLUMBUS SOUTHEAST	SUB 452 - RIVERTON	7.70	7.70						7.70		
81-0	NERC	161.0	NEOSHO 161 KV	SUB 94 - COLUMBUS SOUTHEAST	18.09	18.09						18.09		
84-0	NERC	161.0	LITCHFIELD 161 KV	SUB 349 - ASBURY	6.48	6.48		6.48						6.48
84-0	NERC	161.0	CARTHAGE	SUB 395 - CARTHAGE SOUTHWEST	4.10	4.10		4.10						4.10
84-0	NERC	161.0	SUB 349 - ASBURY	SUB 421 - PURCELL SOUTHWEST	11.70	11.70		11.70						11.70
84-0	NERC	161.0	SUB 395 - CARTHAGE SOUTHWEST	SUB 421 - PURCELL SOUTHWEST	7.70	7.70		7.70						7.70
86-0	NERC	161.0	SUB 452 - RIVERTON	SUB 404 - HOCKERVILLE	8.10	8.10		8.10						8.10
88-0	NERC	161.0	SUB 382 - LARUSSEL	SUB 383 - MONETT	18.00	18.00		18.00						18.00
89-0	NERC	161.0	TABLE ROCK	SUB 438 - RIVERSIDE	3.10	3.10			3.10					
91-0	NERC	161.0	SUB 392 - DECATUR SOUTH	FLINT CREEK POWER PLANT	5.0000	5.00			5.00					
91-1	NERC	161.0	GROVE	SUB 435 - NOEL SOUTHWEST	14.41	14.41			14.41					
93-0	NERC	161.0	SUB 368 - DADEVILLE EAST	MORGAN AEC 440 SUB	0.70	0.70			0.70					
PSO-GRDA	NERC	138.0	VINITA JUNCTION 138KV	SUB 404 - HOCKERVILLE	36.32	0.00								
01-3	?	69.0	SUB SEKAN	SUB 444 - SHERWIN CITY	2.46	2.46						2.46		
01-0		69.0	SUB 282 - COLUMBUS TENNESSEE ST.	SUB 94 - COLUMBUS SOUTHEAST	2.00	2.00						2.00		
01-0		69.0	SUB 94 - COLUMBUS SOUTHEAST	SUB 167 - RIVERTON	7.20	7.20							7.20	
01-1		69.0	SUB 282 - COLUMBUS TENNESSEE ST.	SUB 282 - COLUMBUS TENNESSEE ST.	1.80	1.80						1.80		
01-1		69.0	SUB SEKAN	SUB 425 - SHERMAN CITY	7.20	7.20						7.20		
01-2		69.0	SUB SEKAN	SUB SEKAN	1.00	0.00								
01-2		69.0	SUB 282 - COLUMBUS TENNESSEE ST.	SUB SEKAN	3.80	0.00								
06-0		69.0	SUB 428 - FAIRLAND SOUTHWEST	SUB 363 - FAIRLAND WEST	1.70	1.70							1.70	
06-0		69.0	SUB 167 - RIVERTON	SUB 406 - RIVERTON SOUTH	0.40	0.40							0.40	
06-0		69.0	SUB 271 - BAXTER SPRINGS WEST	SUB 291 - BAXTER SPRINGS 12TH ST.	5.60	5.60							5.60	
06-0		69.0	SUB 271 - BAXTER SPRINGS WEST	SUB 404 - HOCKERVILLE	4.00	4.00							4.00	
06-0		69.0	SUB 291 - BAXTER SPRINGS 12TH ST.	SUB 406 - RIVERTON SOUTH	2.80	2.80							2.80	
06-0		69.0	SUB 377 - QUAPAW (EAGLE PICHER)	SUB 404 - HOCKERVILLE	2.40	2.40							2.40	
06-1		69.0	SUB 291 - BAXTER SPRINGS	SUB 291 - BAXTER SPRINGS 12TH ST.	2.94	2.94							2.94	
06-2		69.0	SUB 381 - COMMERCE NORTH	SUB 381 - COMMERCE NORTH	3.60	3.60							3.60	
06-2		69.0	SUB 381 - COMMERCE NORTH	SUB 363 - FAIRLAND WEST	20.40	20.40							20.40	
06-2		69.0	SUB 381 - COMMERCE NORTH	SUB 377 - QUAPAW (EAGLE PICHER)	0.40	0.40							0.40	
08-0		69.0	SUB 250 - ARCOLA NORTH	SUB 614 - GREENFIELD	13.20	13.20				13.20				
08-1		69.0	SUB 250 - ARCOLA NORTH	SUB 631 - STOCKTON CITY	11.60	11.60				11.60				
08-1		69.0	SUB 324 - STOCKTON NORTHWEST	SUB 631 - STOCKTON CITY	0.40	0.40				0.40				
08-2		34.5	SUB 308 - HUMANSVILLE WEST	SUB 283 - DUNNEGAN	6.86	6.86					6.86			
08-2		34.5	SUB 308 - HUMANSVILLE WEST	SUB 304 - CAPLINGER	13.73	13.73		13.73						13.73
08-2		34.5	SUB 324 - STOCKTON NORTHWEST	SUB 304 - CAPLINGER	5.70	5.70				5.70				
08-3		34.5	SUB 308 - HUMANSVILLE WEST	SUB 318 - COLLINS SOUTH	7.46	7.46				7.46				
08-4		69.0	SUB 418 - AEC STOCKTON	SUB 631 - STOCKTON CITY	2.20	2.20				2.20				
20-0		34.5	SUB 217 - FAIRPLAY EAST	SUB 283 - DUNNEGAN	6.84	6.84					6.84			
20-0		69.0	SUB EXPLORER PLEASANT HOPE TAP	SUB EXPLORER PLEASANT HOPE	1.50	1.50				1.50				
20-0		69.0	SUB EXPLORER PLEASANT HOPE TAP	SUB 73 - BOLIVAR BURNS	6.90	6.90				6.90				
20-0		69.0	SUB EXPLORER PLEASANT HOPE TAP	SUB 323 - BRIGHTON EAST	3.20	3.20				3.20				
20-0		69.0	SUB 209 - HERMITAGE	SUB 73 - BOLIVAR BURNS	24.79	24.79				24.79				
20-0		69.0	SUB 80 - MARSHFIELD JCT.	SUB 170 - NICHOLS ST.	8.80	8.80				8.80				
20-0		69.0	SUB 80 - MARSHFIELD JCT.	SUB 323 - BRIGHTON EAST	8.00	8.00				8.00				
21-0		69.0	SUB 184 - NEOSHO SOUTH JCT.	SUB 314 - NEOSHO LINDE	1.20	1.20				1.20				
21-0		69.0	SUB 184 - NEOSHO SOUTH JCT.	SUB 322 - ANDERSON SOUTHWEST	15.20	15.20				15.20				
21-0		69.0	SUB 326 - DECATUR NORTH	SUB 392 - DECATUR SOUTH	1.60	1.60				1.60				
21-0		69.0	SUB 326 - DECATUR NORTH	SUB 700 - GRAVETTE	4.40	4.40				4.40				
21-0		69.0	SUB 435 - NOEL SOUTHWEST	SUB 700 - GRAVETTE	10.40	10.40				10.40				

Empire District Electric Company

Transmission System -- Vegetation Management

								52.60	341.81	267.50	213.46	211.82	206.01	209.74	211.51
Line #	**NERC**	**KV**	**From -- Expanded**	**To -- Expanded**	**Total Miles**	**EDE Miles**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
21-0		69.0	SUB 443 - NOEL CITY	SUB 322 - ANDERSON SOUTHWEST	7.20	7.20				7.20				
21-0		69.0	SUB 443 - NOEL CITY	SUB 435 - NOEL SOUTHWEST	2.40	2.40				2.40				
21-1		69.0	SUB 56 - NEOSHO WEST	SUB 314 - NEOSHO LINDE	2.80	2.80				2.80				
21-2		69.0	SUB 184 - NEOSHO SOUTH JCT.	SUB 296 - NEOSHO SOUTHEAST (ROCKETDYN	2.40	2.40				2.40				
21-3		69.0	SUB 414 - SOUTHWEST CITY	SUB 435 - NOEL SOUTHWEST	2.40	2.40				2.40				
25-0		69.0	SUB 59 - JOPLIN 26TH ST.	SUB 64 - JOPLIN 10TH ST.	1.60	1.60		1.60					1.60	
26-0		69.0	SUB 121 - ASH GROVE H.T.	SUB 260 - LAWRENCEBURG SHELL	11.60	11.60		11.60					11.60	
26-0		69.0	SUB 121 - ASH GROVE H.T.	SUB 445 - WILLARD	6.68	6.68		6.68					6.68	
26-0		69.0	SUB 260 - LAWRENCEBURG SHELL	SUB 338 - HEATONVILLE CHEROKEE	6.80	6.80		6.80					6.80	
26-0		69.0	SUB 262 - ALBATROSS	SUB 338 - HEATONVILLE CHEROKEE	4.80	4.80		4.80					4.80	
26-0		69.0	SUB 262 - ALBATROSS	SUB 351 - MOUNT VERNON EAST	5.60	5.60		5.60					5.60	
26-0		69.0	SUB 351 - MOUNT VERNON EAST	SUB 420 - MT. VERNON EAST	0.80	0.80		0.80					0.80	
26-0		69.0	SUB 355 - AURORA WEST	SUB 420 - MT. VERNON EAST	10.00	10.00	10.00						10.00	
26-0		69.0	SUB 80 - MARSHFIELD JCT.	SUB 445 - WILLARD	6.35	6.35				6.35				
26-0		69.0	SUB 80 - MARSHFIELD JCT.	SUB 397 - FAIRGROVE SOUTH	8.80	8.80				8.80				
26-0		69.0	SUB 124 - AURORA H.T.	SUB 355 - AURORA WEST	2.80	2.80		2.80						2.80
26-1		69.0	SUB 351 - MOUNT VERNON EAST	MT. VERNON CITY 348	1.00	1.00		1.00						1.00
26-2		69.0	SUB 364 - RESCUE EXPLORER	SUB 262 - ALBATROSS	7.20	7.20		7.20					7.20	
26-4		69.0	SUB 121 - ASH GROVE H.T.	SUB 368 - DADEVILLE EAST	15.60	15.60		15.60						15.60
26-5		69.0	SUB 445 - WILLARD	SUB 369 - WILLARD	2.10	2.10		2.10						2.10
27-0		34.5	SUB 299 - CHETOPA CITY	SUB 271 - BAXTER SPRINGS WEST	14.90	14.90		14.90						14.90
27-0		34.5	SUB 300 - CHETOPA SOUTH	SUB 388 - CHETOPA TWIN VALLEY	0.30	0.30		0.30						0.30
27-0		34.5	SUB 388 - CHETOPA TWIN VALLEY	SUB 186 - WELCH NORTH	11.18	11.18		11.18						11.18
27-0		69.0	SUB 66 - SCAMMON SOUTH	SUB 94 - COLUMBUS SOUTHEAST	10.30	10.30						10.30		
27-1		69.0	SUB 94 - COLUMBUS SOUTHEAST	SUB 271 - BAXTER SPRINGS WEST	7.20	7.20							7.20	
27-3		34.5	SUB 299 - CHETOPA CITY	SUB 299 - CHETOPA CITY	0.82	0.82		0.82						0.82
27-3		34.5	SUB 299 - CHETOPA CITY	SUB 300 - CHETOPA SOUTH	0.25	0.25		0.25						0.25
29-0		69.0	SUB 145 - JOPLIN WEST 7TH	SUB 278 - GALENA NORTHEAST	8.00	8.00		8.00						8.00
29-0		69.0	SUB 167 - RIVERTON	SUB 278 - GALENA NORTHEAST	8.80	8.80		8.80						8.80
30-0		69.0	SUB 124 - AURORA H.T.	SUB 152 - MONETT H.T.	11.20	11.20					11.20			
30-0		69.0	SUB 124 - AURORA H.T.	SUB 437 - MARIONVILLE NORTHWEST	8.40	8.40					8.40			
30-0		69.0	SUB 131 - DIAMOND JCT.	SUB 393 - REINMILLER	12.43	12.43					12.43			
30-0		69.0	SUB 152 - MONETT H.T.	SUB 383 - MONETT	2.00	2.00		2.00						2.00
30-0		69.0	SUB 170 - NICHOLS ST.	SUB 345 - REPUBLIC NORTHEAST	10.80	10.80					10.80			
30-0		69.0	SUB 205 - WENTWORTH WEST	SUB 362 - SARCOXIE SOUTHWEST	3.20	3.20					3.20			
30-0		69.0	SUB 205 - WENTWORTH WEST	SUB 383 - MONETT	13.20	13.20					13.20			
30-0		69.0	SUB 221 - BILLINGS NORTHEAST	SUB 359 - REPUBLIC EAST	6.04	6.04					6.04			
30-0		69.0	SUB 221 - BILLINGS NORTHEAST	SUB 437 - MARIONVILLE NORTHWEST	8.00	8.00					8.00			
30-0		69.0	SUB 345 - REPUBLIC NORTHEAST	SUB 359 - REPUBLIC EAST	5.20	5.20					5.20			
30-0		69.0	SUB 347 - GRANBY JUNCTION	SUB 131 - DIAMOND JCT.	1.50	1.50					1.50			
30-0		69.0	SUB 393 - REINMILLER	SUB 447 - 32ND & STEPHENS	3.10	3.10					3.10			
30-0		69.0	SUB 59 - JOPLIN 26TH ST.	SUB 258 - GATEWAY SOUTH	1.60	1.60					1.60			
30-1		69.0	SUB 109 - ATLAS JCT.	SUB 315 - SOLAR (ATLAS POWDER CO.)	2.80	2.80					2.80			
30-1		69.0	SUB 315 - SOLAR TAP (ATLAS POWDER CO.)	SUB 393 - REINMILLER	4.00	4.00					4.00			
30-3		69.0	SUB 347 - GRANBY JUNCTION	SUB 242 - DIAMOND SHELL	1.00	1.00					1.00			
30-4		69.0	SUB 347 - GRANBY JUNCTION	SUB 347 - GRANBY	4.00	4.00					4.00			
30-5		69.0	SUB 131 - DIAMOND JCT.	SUB 362 - SARCOXIE SOUTHWEST	8.80	8.80					8.80			
30-5		69.0	SUB 362 - SARCOXIE	SUB 362 - SARCOXIE SOUTHWEST	4.33	4.33					4.33			
30-6		69.0	SUB 376 - MONETT CITY SOUTH J2	SUB 383 - MONETT	9.20	9.20		9.20					9.20	
30-7		69.0	SUB 311 - MONETT CITY	SUB 311 - MONETT CITY	0.40	0.40		0.40					0.40	
30-7		69.0	SUB 352 - MONETT CITY NORTH	SUB 352 - MONETT CITY NORTH	0.40	0.40		0.40					0.40	
30-7		69.0	SUB 352 - MONETT CITY NORTH	SUB 311 - MONETT CITY	1.20	1.20		1.20					1.20	
30-7		69.0	SUB 352 - MONETT CITY NORTH	SUB 383 - MONETT	2.80	2.80	2.80						2.80	

Empire District Electric Company

Transmission System -- Vegetation Management

							52.60	341.81	267.50	213.46	211.82	206.01	209.74	211.51
Line #	**NERC**	**KV**	**From -- Expanded**	**To -- Expanded**	**Total Miles**	**EDE Miles**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
30-7		69.0	SUB 376 - MONETT CITY SOUTH J2	SUB 376 - MONETT CITY SOUTH	0.40	0.40			0.40				0.40	
30-7		69.0	SUB 376 - MONETT CITY SOUTH J2	SUB 416 - MONETT CITY EAST	1.20	1.20		1.20					1.20	
30-7		69.0	SUB 416 - MONETT CITY EAST	SUB 390 - PURDY SOUTH	8.80	8.80			8.80				8.80	
30-8		69.0	SUB 416 - MONETT CITY EAST	SUB 416 - MONETT CITY EAST	0.40	0.40			0.40				0.40	
30-9		69.0	SUB 258 - GATEWAY SOUTH	SUB 447 - 32ND & STEPHENS	1.00	1.00					1.00			
31-0		69.0	SUB 59 - JOPLIN 26TH ST.	SUB 167 - RIVERTON	6.40	6.40		6.40						6.40
32-0		69.0	SUB 100 - JOPLIN 2ND ST.	SUB 284 - JOPLIN EAST 5TH ST.	0.40	0.40		0.40						0.40
32-0		69.0	SUB 108 - CARTHAGE NORTHWEST	SUB 109 - ATLAS JCT.	12.00	12.00					12.00			
32-0		69.0	SUB 109 - ATLAS JCT.	SUB 360 - JOPLIN NORTHEAST	3.19	3.19					3.19			
32-0		69.0	SUB 360 - JOPLIN NORTHEAST	SUB 372 - JOPLIN 2ND & DIVISION	2.80	2.80		2.80						2.80
32-0		69.0	SUB 64 - JOPLIN 10TH ST.	SUB 145 - JOPLIN WEST 7TH	2.40	2.40		2.40						2.40
32-0		69.0	SUB 64 - JOPLIN 10TH ST.	SUB 284 - JOPLIN EAST 5TH ST.	0.80	0.80		0.80						0.80
32-1		69.0	SUB 100 - JOPLIN 2ND ST.	SUB 372 - JOPLIN 2ND & DIVISION	0.40	0.40		0.40						0.40
32-2		69.0	SUB 109 - ATLAS JCT.	SUB 315 - SOLAR TAP (ATLAS POWDER CO.)	0.40	0.40					0.40			
32-2		69.0	SUB 315 - SOLAR (ATLAS POWDER CO.)	SUB 315 - SOLAR TAP (ATLAS POWDER CO.)	2.23	2.23					2.23			
33-0		69.0	SUB 108 - CARTHAGE NORTHWEST	SUB 110 - ORONOGO JCT.	11.20	11.20		11.20				11.20		
33-0		69.0	SUB 108 - CARTHAGE NORTHWEST	SUB 403 - JASPER WEST TAP	8.80	8.80		8.80				8.80		
33-0		69.0	SUB 110 - ORONOGO JCT.	SUB 341 - JOPLIN NORTHWEST	5.20	5.20					5.20			
33-0		69.0	SUB 145 - JOPLIN WEST 7TH	SUB 341 - JOPLIN NORTHWEST	3.20	3.20			3.20					
33-0		69.0	SUB 217 - FAIRPLAY EAST	SUB 368 - DADEVILLE EAST	13.60	13.60				13.60				
33-0		69.0	SUB 217 - FAIRPLAY EAST	SUB 602 - BOLIVAR PLANT	8.00	8.00				8.00				
33-0		69.0	SUB 249 - BOSTON EAST	SUB 251 - GOLDEN CITY NORTH	8.80	8.80					8.80			
33-0		69.0	SUB 249 - BOSTON EAST	SUB 403 - JASPER WEST TAP	8.70	8.70		8.70						8.70
33-0		69.0	SUB 251 - GOLDEN CITY NORTH	SUB 400 - LOCKWOOD	7.60	7.60					7.60			
33-0		69.0	SUB 367 - BOLIVAR SOUTHEAST	SUB 602 - BOLIVAR PLANT	1.60	1.60					1.60			
33-0		69.0	SUB 400 - LOCKWOOD	SUB 614 - GREENFIELD	7.60	7.60					7.60			
33-0		69.0	SUB 403 - JASPER WEST	SUB 403 - JASPER WEST TAP	2.80	2.80					2.80			
33-0		69.0	SUB 73 - BOLIVAR BURNS	SUB 367 - BOLIVAR SOUTHEAST	5.60	5.60					5.60			
33-0		69.0	SUB CU PUMP STATION TAP	SUB 368 - DADEVILLE EAST	5.00	5.00					5.00			
33-0		69.0	SUB CU PUMP STATION TAP	SUB 614 - GREENFIELD	19.50	19.50					19.50			
33-3		69.0	SUB CU PUMP STATION TAP	SUB CU PUMP STATION	1.20	1.20					1.20			
34-0		69.0	SUB 109 - ATLAS JCT.	SUB 280 - OAKLAND EAST	3.20	3.20					3.20			
34-0		69.0	SUB 110 - ORONOGO JCT.	SUB 280 - OAKLAND EAST	1.60	1.60					1.60			
34-0		161.0	SUB 109 - ATLAS JCT.	SUB 432 - JOPLIN OAKLAND NORTH	4.90	4.90						4.90		
34-1		69.0	SUB 105 - WEBB CITY - TOM STREET	SUB 280 - OAKLAND EAST	2.02	2.02			2.02					
35-0		69.0	SUB EXPLORER SPRING CITY TAP	SUB EXPLORER SPRING CITY	1.00	1.00			1.00					
35-0		69.0	SUB EXPLORER SPRING CITY TAP	SUB 389 - JOPLIN SOUTHWEST	2.95	2.95			2.95					
35-0		69.0	SUB 389 - JOPLIN SOUTHWEST	SUB 430 - JOPLIN 32ND & OLIVER	3.20	3.20						3.20		
35-0		69.0	SUB 59 - JOPLIN 26TH ST.	SUB 430 - JOPLIN 32ND & OLIVER	1.60	1.60						1.60		
35-1		69.0	SUB EXPLORER SPRING CITY TAP	SUB 375 - SENECA	5.00	5.00			5.00					
35-1		69.0	SUB 375 - SENECA	SUB 375 - SENECA	5.10	5.10			5.10					
35-1		69.0	SUB 56 - NEOSHO WEST	SUB 375 - SENECA	11.20	11.20			11.20					
36-0		69.0	SUB 167 - RIVERTON	SUB 339 - GULF JAYHAWK	2.16	2.16		2.16					2.16	
38-0		69.0	SUB 243 - BUFFALO SHELL	SUB 333 - FAIRGROVE CHEROKEE	10.30	10.30						10.30		
38-0		69.0	SUB 333 - FAIRGROVE CHEROKEE	SUB 397 - FAIRGROVE SOUTH	24.00	24.00						24.00		
38-0		69.0	SUB 243 - BUFFALO SHELL	SUB 243 - BUFFALO SHELL	0.21	0.21						0.21		
38-0		69.0	SUB 370 - STRAFFORD	SUB 397 - FAIRGROVE SOUTH	5.60	5.60	5.60					5.60		
38-0		69.0	SUB KAMO-STRAFFORD	SUB 370 - STRAFFORD	3.70	3.70	3.70					3.70		
38-0		69.0	SUB KAMO-STRAFFORD	SUB 415 - BLACKHAWK JCT.	16.90	16.90	16.90					16.90		
38-2		69.0	SUB 243 - BUFFALO SHELL	SUB 342 - BUFFALO SOUTH	4.51	4.51						4.51		
38-2		69.0	SUB 73 - BOLIVAR BURNS	SUB 342 - BUFFALO SOUTH	10.00	10.00						10.00		
38-3		69.0	SUB 409 - BUFFALO SOUTH	SUB 342 - BUFFALO SOUTH	5.24	5.24						5.24		
39-0		69.0	SUB 114 - NIXA NORTH	SUB 170 - NICHOLS ST.	13.60	13.60	13.60						13.60	

Empire District Electric Company

Transmission System -- Vegetation Management

							52.60	341.81	267.50	213.46	211.82	206.01	209.74	211.51
Line #	**NERC**	**KV**	**From -- Expanded**	**To -- Expanded**	**Total Miles**	**EDE Miles**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
39-0		69.0	SUB 114 - NIXA NORTH	SUB 415 - BLACKHAWK JCT.	4.80	4.80				4.80			4.80	
39-0		69.0	SUB 312 - POWERSITE	SUB 410 - FORSYTH NORTH	3.20	3.20		3.20					3.20	
39-0		69.0	SUB 330 - OZARK NORTHWEST	SUB 415 - BLACKHAWK JCT.	2.40	2.40		2.40					2.40	
39-0		69.0	SUB 330 - OZARK NORTHWEST	SUB 434 - OZARK SOUTHEAST	2.00	2.00		2.00					2.00	
39-0		69.0	SUB 410 - FORSYTH NORTH	SUB 434 - OZARK SOUTHEAST	26.00	26.00			26.00					
40-0		69.0	SUB 292 - TIPTON FORD	SUB 332 - NEOSHO CHEROKEE	4.40	4.40						4.40		
40-0		69.0	SUB 296 - NEOSHO SOUTHEAST (ROCKETDY	SUB 398 - NEOSHO NORTHEAST	6.40	6.40						6.40		
40-0		69.0	SUB 332 - NEOSHO CHEROKEE	SUB 398 - NEOSHO NORTHEAST	6.40	6.40						6.40		
79-0		161.0	SUB 124 - AURORA H.T.	SUB 383 - MONETT	11.50	11.50		11.50					11.50	
79-0		161.0	SUB 389 - JOPLIN SOUTHWEST	SUB 439 - STATELINE	6.60	6.60		6.60						6.60
79-0		161.0	SUB 292 - TIPTON FORD	SUB 383 - MONETT	29.10	29.10			29.10					
79-0		161.0	SUB 292 - TIPTON FORD	SUB 389 - JOPLIN SOUTHWEST	7.20	7.20		7.20						7.20
79-0		161.0	SUB 452 - RIVERTON	SUB 439 - STATELINE	9.00	9.00		9.00						9.00
80-0		161.0	SUB 124 - AURORA H.T.	SUB 295 - REEDS SPRING	11.50	11.50		11.50						11.50
80-0		161.0	SUB 295 - REEDS SPRING	SUB 424 - AEC REEDS SPRING	1.50	1.50		1.50						1.50
80-0		161.0	SUB 312 - POWERSITE	SUB 331 - BRANSON NORTH	7.90	7.90			7.90					
80-0		161.0	SUB 331 - BRANSON NORTH	SUB 412 - BRANSON NORTHWEST	1.10	1.10		1.10						1.10
80-0		161.0	SUB 412 - BRANSON NORTHWEST	SUB 424 - AEC REEDS SPRING	7.60	7.60		7.60						7.60
80-1		161.0	SUB 413 - BRANSON SOUTHWEST	SUB 438 - RIVERSIDE	3.80	3.80			3.80					
80-1		161.0	SUB 412 - BRANSON NORTHWEST	SUB 433 - GRETNA	2.60	2.60			2.60					
80-1		161.0	SUB 413 - BRANSON SOUTHWEST	SUB 433 - GRETNA	2.60	2.60			2.60					
82-0		161.0	SUB 110 - ORONOGO JCT.	SUB 452 - RIVERTON	13.40	13.40		13.40					13.40	
83-0		161.0	CARTHAGE	SUB 109 - ATLAS JCT.	8.20	8.20		8.20					8.20	
83-0		161.0	SUB 110 - ORONOGO JCT.	SUB 432 - JOPLIN OAKLAND NORTH	1.80	1.80			1.80					
85-0		161.0	SUB 110 - ORONOGO JCT.	SUB 417 - JOPLIN FIR RD.	3.20	3.20			3.20					
85-0		161.0	SUB 349 - ASBURY	SUB 366 - CARL JUNCTION	13.10	13.10			13.10					
85-0		161.0	SUB 366 - CARL JUNCTION	SUB 417 - JOPLIN FIR RD.	2.40	2.40			2.40					
87-0		161.0	SUB 124 - AURORA H.T.	SUB 446 - CHESAPEAKE	13.50	13.50			13.50					
87-0		161.0	SUB 368 - DADEVILLE EAST	SUB 431 - BOLIVAR SOUTH	17.20	17.20			17.20					
87-0		161.0	SUB 368 - DADEVILLE EAST	SUB 446 - CHESAPEAKE	25.12	25.12			25.12					
87-0		161.0	SUB 73 - BOLIVAR BURNS	SUB 431 - BOLIVAR SOUTH	8.20	8.20			8.20					
89-0		161.0	SUB 312 - POWERSITE	SUB 387 - HOLLISTER EAST	0.80	0.80			0.80					
89-0		161.0	SUB 387 - HOLLISTER EAST	SUB 438 - RIVERSIDE	6.40	6.40			6.40					
91-0		161.0	SUB 184 - NEOSHO SOUTH JCT.	SUB 435 - NOEL SOUTHWEST	23.10	23.10			23.10					
91-0		161.0	SUB 392 - DECATUR SOUTH	SUB 435 - NOEL SOUTHWEST	17.40	17.40			17.40					
92-0		69.0	SUB 292 - TIPTON FORD	SUB 393 - REINMILLER	4.00	4.00						4.00		
92-0		161.0	SUB 389 - JOPLIN SOUTHWEST	SUB 422 - JOPLIN 24TH & CONNECTICUT	7.16	7.16		7.16					7.16	
92-0		161.0	SUB 391 - JOPLIN SOUTHEAST	SUB 422 - JOPLIN 24TH & CONNECTICUT	2.80	2.80		2.80					2.80	
92-0		161.0	NEOSHO	SUB 184 - NEOSHO SOUTH JCT.	1.70	1.70						1.70		
92-0		161.0	NEOSHO	SUB 292 - TIPTON FORD	10.60	10.60						10.60		
92-0		161.0	SUB 393 - REINMILLER	SUB 391 - JOPLIN SOUTHEAST	2.05	2.05		2.05						2.05
95-0		161.0	SUB 110 - ORONOGO JCT.	SUB 145 - JOPLIN WEST 7TH	5.80	5.80						5.80		
95-0		161.0	SUB 145 - JOPLIN WEST 7TH	SUB 439 - STATELINE	5.50	5.50		5.50						5.50
96-0		161.0	SUB 389 - JOPLIN SOUTHWEST	SUB 439 - STATELINE	7.00	7.00						7.00		
KAMO		69.0	SUB 446 - CHESAPEAKE	KAMO MAINTAINED	6.06	0.00								
KAMO		69.0	SUB 446 - CHESAPEAKE	KAMO MAINTAINED	1.84	0.00								
Westar		161.0	LITCHFIELD 161 KV	MARMTNE5 161 KV	40.54	0.00								
					1409.44	1305.64	52.60	341.81	267.50	213.46	211.82	206.01	209.74	211.51

Section 1.2.3

Mid-Cycle Description

Transmission System Vegetation Patrol

Ground Surveys – Ground surveys performed in the spring will be used prepare for summer readiness and mitigate issues that have risen due to winter damage. Ground surveys performed during summer months will help to deal with changes in threats that may occur from springtime thunderstorms.

Aerial surveys – Aerial surveys are conducted annually during the fall to enable appropriate action for immediate threats to the transmission facility. Reports from aerial surveys will be used in conjunction with ground surveys to develop the following year's annual work plan.

Section 1.3

Brochures

Section 1.3.1

Customer Contact Brochures

The Empire District Electric Company has scheduled a tree crew to trim your trees away from the power lines in the near future.

Trees growing into power lines become one of the leading causes of power outages. Tree care professionals working for The Empire District Electric Company will be in your neighborhood trimming and/or removing trees that may interfere with our distribution lines.

All trees are pruned according to The Empire District Electric Company guidelines, which are based on recommendations by tree-care experts and organizations such as the National Arbor Day Foundation (arborday.org) and the International Society of Arboriculture (isa-arbor.org).

This important service will be provided, at no cost to you, by __Wright Tree Service__ when Empire line clearance professionals are performing scheduled trimming work in your neighborhood.

There are four types of vegetation management: Conventional Trimming, Mechanical Clearing, Herbicide Application, and Tree Removal. A check mark next to a section indicates that the inspector has determined that this method is best suited for all/part of the vegetation management occurring on your property.

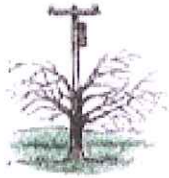
It is our desire at The Empire District Electric Company to inform and discuss our vegetation management practices with property owners. If you have any questions or concerns, please call **(800) 639-0077, ext. 6185** within the next 5 days.

EMPIRE
SERVICES YOU COUNT ON

DATE: _____

❑ **CONVENTIONAL TRIMMING JOB #**_____

Side Trim



V-Trim

Includes Brush Control

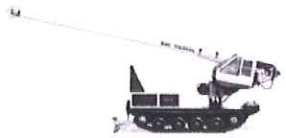
Limbs will be chipped and removed. Logs will be cut into firewood and stacked on the property. Please call us if you wish to have firewood removed.

❑ **MECHANICAL CLEARING JOB #**_____

Trees/brush within the prescribed width will be managed by the machine(s) described below.

Mechanical clearing equipment:
- Tree Mower/Shredder: Mulching/Shredding trees and brush.
- Tree Shear: Shearing trees off at ground level.
- Mechanical Tree Trimmer: Side trimming and topping.

Mower/Shredder



Mechanical Trimmer

Additional Comments:_____

_____

_____

❑ **HERBICIDE JOB #**_____

Herbicides can be used in a controlled and selective manner to focus just on those plants and trees that are problematic while promoting varying herbaceous, grass, and shrub species for cover and food sources to wildlife.

❑ **TREE REMOVAL REQUEST**

Trees identified on this property that need to be removed are listed in the chart below.

Please fill out and sign the postage paid post card below. Cut along the "cut line" and mail it back to us. The trees listed below will be removed **free of charge** when Empire line clearance professionals are performing scheduled trimming work in your neighborhood. If permission is not granted for removal, the trees will be trimmed by one of the previous methods.

Limbs will be chipped and removed. Logs will be cut into firewood and stacked on the property. Stumps will be treated to eliminate regrowth. Please call us if you wish to have firewood removed.

cut line

cut line

TREE REMOVAL CARD

❑ **I am not the property owner.** (Please provide the name and address of the property owner in the appropriate spaces below and return this card to us.)

Species	Count	Size	Comments

Limbs will be chipped and removed. Logs will be cut into firewood and stacked on the property. Stumps will be treated to eliminate regrowth. Please call us if you wish to have firewood removed.

CIRCUIT # _____ **JOB#** _____

ADDRESS: _____

NAME: _____

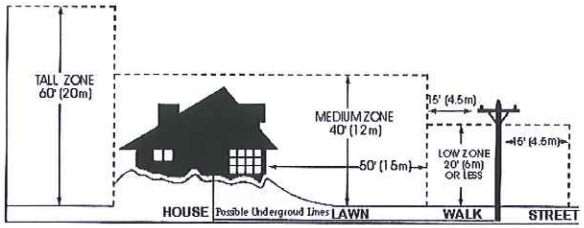
TELEPHONE #: _____

❑ **As owner, I hereby grant permission to remove the trees.**

SIGNATURE: _____

DATE: _____

TD-175 6-08



For your safety, never trim trees near power lines yourself!

Tree Planting Tips

Tree Planting

Whether it's Spring, Summer, or Fall, if you are planning to work on your landscaping, remember these tips.

Planting trees for efficiency:

Deciduous trees (trees that shed their leaves in winter) are best planted on the west or southwest side. There, they will provide shade in the summer, helping to cool the building. In the winter, the bare branches of these trees will let sunshine through to provide warmth.

Evergreen trees planted on the north and west can help shield outside walls from winds in winter. This can help reduce your heating costs.

How trees affect electrical service:

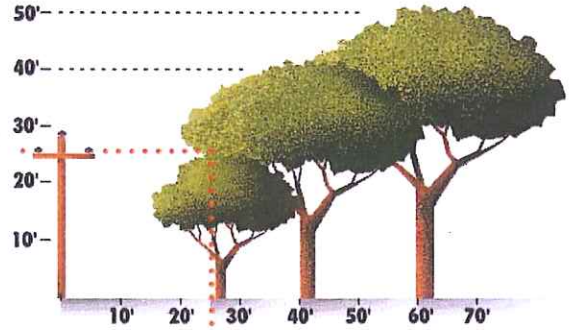
Tree limbs can short-circuit your electricity if they rub against your power lines. This may cause your lights to flicker or your digital clocks to stop. The best way to ensure your trees never rub on your lines is to do some simple planning before you plant.

Choosing trees:

Plant small trees at least 25 feet away from power lines. Flowering trees including dogwood, redbud, and crab-apple; small fruit trees; cedar.

Medium-size trees should be kept at least 40 feet away from power lines. Sugar maple; Norway maple; English oak.

Large trees should be kept at least 60 feet away from power lines. Pine; pin oak; walnut; hickory; sweet gum; pecan.



STOP
No tree zone!
No trees within 25' of power lines

CAUTION
Small tree zone
Plant trees less than 25' in height/spread at least 25' from overhead power lines

CAUTION
Medium tree zone
Plant trees 25'-40' in height/spread at least 40' from overhead power lines

GO
Large tree zone
Plant trees larger than 40' in height/spread at least 60' from overhead power lines

Safety:

Before digging or planting, please locate your underground utilities by calling your state One Call system.

Missouri—800-DIG-RITE
Arkansas—800-482-8998
Kansas—800-DIG-SAFE
Oklahoma—800-522-OKIE

Cutting a power line can be deadly. Never trim tree limbs near power lines, call us first. Our linemen will be happy to come to your home to take down lines while you trim.

EMPIRE
SERVICES YOU COUNT ON

800-639-0077 ext. 6185
www.empiredistrict.com

Section 1.3.2

Education & Outreach Samples

Why does Empire District trim trees?

- Overgrown vegetation is the leading cause of power outages
- Increase the reliability of our electrical service
- For your and our employees' safety

Where will Empire District trim trees?

- Transmissions lines used to deliver power to our substations
- Distribution lines used to deliver power to your home or business

What is not covered in Empire District's Vegetation Plan?

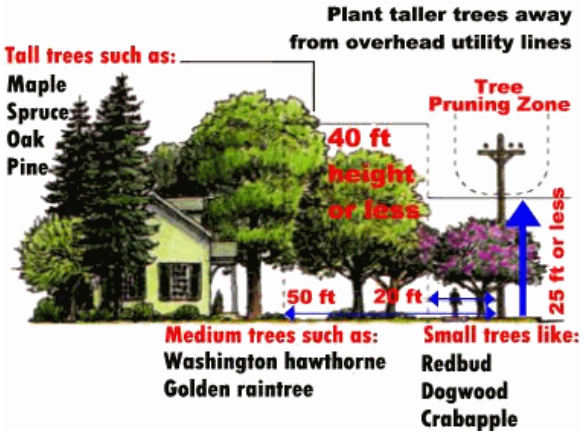
- The customers service line
- Cable TV and telephone lines
- Debris removal from storm damage

What are the goals and objectives of Empire's Vegetation Plan?

- To increase the overall reliability of our electrical service
- To trim all Transmission and Distribution lines every six years
- To review all Transmission and Distribution lines at least every 3 years for hazardous trees
- To use natural pruning techniques
- To use herbicides where applicable
- To remove problem trees
- To educate the public on the effects of Empire's Vegetation Plan

What can you do to assist?

- Contact Empire to take down the your service line during trimming
- Use a certified arborist to trim trees for your service line
- Notify Empire District if there is a tree contacting electrical lines at (800) 206-2300
- Look for bill stuffers, door hangers and letters about vegetation plans on your property or nearby electric lines
- Before you dig, call the One Call or Dig Safe numbers to mark underground lines
- Plant the right tree in the proper place



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SERVICES YOU COUNT ON

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SERVICES YOU COUNT ON

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Section 1.3.3

Website Sample

Preventive Maintenance

Trees are one of the main causes of power outages in Empire District's service territory, which includes 165,000 customers in Missouri, Kansas, Oklahoma, and Arkansas. When limbs fall onto power lines, the damage is not just inconvenient – it can also be dangerous. Sometimes live electrical lines fall to the ground or power is cut to traffic signals, fire-alarm systems, and health-care facilities.

To address this problem, Empire District engages in a full-scale tree-trimming program. For most distribution lines, (those that serve your neighborhood), this means we must provide at least four to six growing seasons of clearance, but sometimes more is needed. The full width of the right-of-way needs to be cleared of threatening vegetation. Trees along the edge of a right-of-way receive side trimming to keep limbs from growing laterally into power lines.

A tree-trimming and rights-of-way maintenance program is a tall order with crews scheduled to revisit each area periodically (every four to six years) to perform vegetation management. Our service area contains hundreds of thousands of trees. With that many trees and 5,400 miles of overhead energized power lines, it's always tree-trimming season at Empire District.

Safety

Homeowners need to exercise extreme caution when cutting or trimming trees near electrical lines. Trimming your own trees can be dangerous. If a particular tree is near power lines and you're unsure about trimming it, call Empire District. We can determine whether trimming or cutting down a tree could pose a threat to you or to our facilities. Professionals qualified for line-clearance work can do the trimming or removal safely.

Where does Empire District perform vegetation management?

Empire District Electric Company will maintain its transmission and distribution facilities up to the customer's service line. The line from the customer's premise to the first pole is each customer's responsibility.

If a customer wishes to remove vegetation from the service line, Empire will provide assistance by dropping the service line.

Empire District Electric will only manage the vegetation near electric lines. Empire will not trim trees that come into contact with cable TV or telephone lines.

Remove or Trim?

Occasionally, trees are planted in unsuitable areas. Some trees belong in the forest, not in an urban environment. Trees like silver maples, willows, and sycamores can grow 7 to 10 feet a year after they've been trimmed. When these types of trees are placed directly under or near power lines, removal is often the best solution.

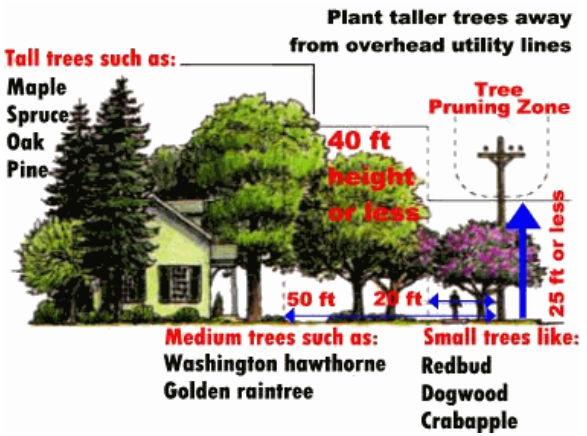
Before removal is recommended, certain factors are considered. Does a tree pose safety hazards when there are high winds? Is the tree diseased? For some fast-growing trees, the repeated trimmings required to keep limbs clear of power lines increase tree decay and make trees more susceptible to disease. Low-growing species more suited to an urban environment are best in these locations.

When a tree threatens electrical lines, Empire District will attempt to notify the property owner to remove it free of charge. However in an emergency, we are not always able to contact the property owner in advance of removing a tree. Property owners must make their own arrangements for removal of trees which may threaten individual service lines.

Customers should start pruning trees early in their development and continue throughout the tree's life. For most trees, winter and early spring are the ideal time to prune. Trimming during this time gives the plant time to replace lost branches and foliage before it starts to grow in the spring, allows wounds to close more quickly, and reduces likelihood of disease and insect infestation.

There are different kinds of pruning cuts used for tree maintenance. Never prune or trim trees near power lines. Call (800) 206-2300 to report limbs down or limbs contacting lines.

The Right Tree in the Right Place

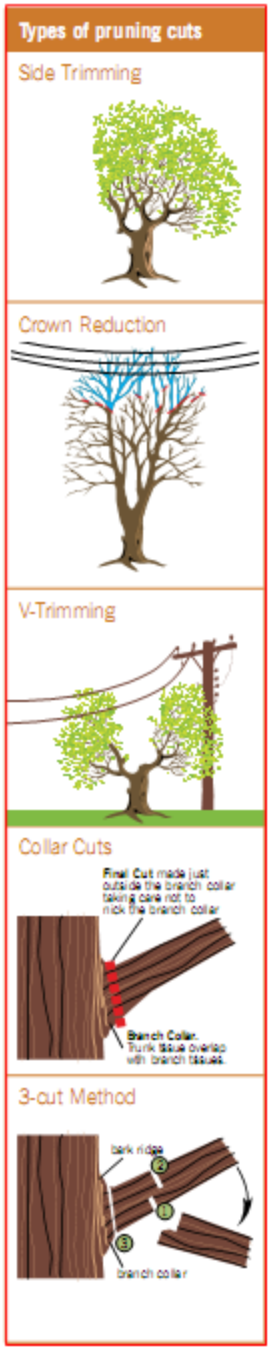


Proper Pruning Methods

- Side trimming cuts back branches on one side of the tree.
- Crown reduction reduces percentage of overall height of tree. This technique, which is used when a tree has grown too large for its space, is preferred to topping because it results in a more natural appearance, increases the time before pruning is needed again and minimizes stress.
- V-trimming removes entire branches from the center of the tree, while side branches are allowed to grow.
- Collar cuts leave a raised collar of tissue at the branch junction. This method promotes rapid wound covering of tree tissue, reducing external dieback and disease infection.
- 3-cut method shortens branches larger than ¾ inch or 2 cm in diameter before removal and prevents the branch from damaging the trunk as it falls to the ground.
- 3:1 lateral ratio makes a pruning cut back to a lateral branch that is at least 1/3 the diameter of the branch being removed. Pruning practices that can cause irreparable harm to a tree are topping and tipping.

Improper Pruning Methods

- Topping makes indiscriminate cuts in mature trees, leaving open wounds that are subject to disease and decay.
- Tipping involves cutting off the ends of branches. This method causes excessive sprouting, making retrimming an annual event.



AFFIDAVIT

State of Missouri)
)ss
County of Jasper)

I, Michael E. Palmer, having been duly sworn upon my oath, state that I am the Vice President of Commercial Operation of The Empire District Electric Company (Empire), that I am duly authorized to make this affidavit on behalf of Empire, and that the matters and things stated in the foregoing are true and correct to the best of my information, knowledge and belief.

Michael E. Palmer

Subscribed and sworn before me this 30th day of June, 2008.

Sherri J. Blalock
Notary Public

SHERRI J. BLALOCK
Notary Public - Notary Seal
State of Missouri
Commissioned for Newton County
My Commission Expires: November 16, 2010
Commission Number: 06969626