

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Commission's)	
Review of the Ohio Power Company's)	
Revised Vegetation Management Program)	Case No. 12-3284-EL-UNC
Resulting from Commission)	
Case No. 11-346-EL-SSO et al.)	

**Ohio Power Company's Commission Requested
Revised Vegetation Management Program**

On August 8, 2012 the Commission approved an Electric Security Plan for Ohio Power Company ("AEP Ohio" or "Company"), including approval of the continuance of the Enhanced Service Reliability Rider (ESRR) through 2014 in Commission Case Nos. 11-346-EL-SSO et al. ("*ESP II Order*"). As part of the approval of the ESRR, the Commission instructed the Company to file a revised vegetation management program reflecting the end-to-end cycle trimming which is to begin in 2014. Specifically the Commission stated:

We direct AEP-Ohio to file a revised vegetation management program consistent with this Order and Rule 4901:1-10-27(E)(2) and (3), O.A.C., by no later than December 31, 2012. We see no need to wait until December 2013 for the filing, as requested by Staff, in light of our ruling in the Order

This filing represents AEP Ohio's 2014 vegetation management program. AEP Ohio asks that this filing have an effective date of no earlier than January 1, 2014, since it will not reflect the current vegetation management program until that timeframe. This will allow for AEP Ohio's current filed and approved vegetation work-plan to remain in place until the end of 2013. The Company may make additional changes to the 2014 plan during 2013 if needed. Any changes made would follow the normal filing and approval period as outlined in Rule 4901:1-10-27(F)(1).

AEP Ohio is filing a redline version of the changes as well as a clean copy of the changes to the distribution vegetation management section. AEP Ohio has not filed the entire maintenance program so that changes could be made to other sections prior to the effective date of this forestry maintenance section on January 1, 2014.

Respectfully submitted,

/s/ Steven T. Nourse

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1. Network Systems (**Attachment H**)

III. Other Transmission Programs:

1. Line Inspections (**Attachment I**)
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Distribution: Right-of-Way Vegetation Control

Program Details

The objective of AEP Ohio's vegetation management program is to address public safety and service reliability in a cost effective manner. A well-planned vegetation management program should be long-term and should address vegetation issues through three key components. The first component is cyclic right-of-way clearing which proactively maintains vegetation on all circuits. Second is a reactive component that addresses immediate outage and safety concerns. The third aspect of the program is a quality of service component that is reliability based ~~and includes breaker zone clearing,~~ remediation of Rule 11 worst performing circuit vegetation issues, and correction of intermediate cycle vegetation issues caused by fast growing tree species, also known as cycle busters.

An effective vegetation management program will prescribe a maintenance plan for each circuit being addressed. The program should utilize best practices and prescriptions should take into account the location of rights-of-way, the types of vegetation present, the environmental impact of the work being performed and any restrictions in the program plan. This approach is referred to as an integrated vegetation management plan or IVM. The considerations to be taken into account include, but are not limited to:

- Type of maintenance treatment, i.e. mechanical clearing with mowers or mechanical pruning, manual climbing and pruning, herbicide application, etc., based on right-of-way and environmental conditions;
- A priority and schedule of treatment by line/circuit or section within a circuit;
- Cost of treatment

As the plan progresses over time, these work prescriptions will change based on the size and type of vegetation. The initial prescription for clearing an easement may include several types of activity such as: pruning, removing, mowing and herbicide treatment. In four years that same easement's work prescription may only require herbicide treatment. AEP Ohio's Forestry staff and contractors continuously work to insure the appropriate prescription is utilized to increase effectiveness and efficiency.

AEP Ohio Vegetation Management Program Elements

- Forestry's annual work plan
- Rule 11 Worst Performing Circuits
- Unscheduled Work
- New Construction
- Storm Work

Annual Work Plan – With approval in March 2009 and August 2012 of AEP Ohio's Enhanced Vegetation Management Program, AEP Ohio ~~is moving~~ has moved to a 4-year full circuit vegetation clearing program beginning in 2014. ~~In order to put the systems in position for the wholesale move to a 4-year cycle, AEP Ohio, over the 5-year period 2009-2013, will prepare the distribution systems for the move to a 4-year cycle. This 5-year preparatory period will allow AEP Ohio to prepare the systems through end to end~~

~~clearing of all circuits and gathering of necessary data to implement an effective 4-year program.~~ End-to-end clearing of circuits involves the clearing of vegetation from all overhead primary lines, from the start of the circuit at the substation to the end of the primary line. AEP Ohio's line clearance guidelines are attached as Exhibit A.

~~In 2008, AEP Ohio began a 4 year program to clear circuit breaker zones of vegetation in order to reduce tree related circuit breaker lockouts and improve reliability and customer satisfaction. A circuit's breaker zone is the section of distribution line from the circuit breaker in the substation to the circuit's first downstream automatic sectionalizing device. A fault in the breaker zone will interrupt service to all customers served by that circuit.~~

~~When the breaker zone program began in 2008, a 4 year plan was laid out that prioritized the circuits based upon historical tree related outage performance. The circuits with the worst performance were scheduled to have their breaker zones cleared early on in the cycle. 2009 is the second year of the 4 year breaker zone program.~~

~~During this first year (2009) of the 5 year preparatory period AEP Ohio will begin completing end to end clearing on the circuits that had their breaker zones cleared in 2008. In the second year AEP Ohio will begin end to end clearing of the circuits that had their breaker zones cleared in 2009. It should be noted that, as part of the work going forward for end to end clearing of the 2008 and 2009 breaker zone circuits, AEP Ohio will inspect the breaker zones again and clear any vegetation necessary to make it through the cycle.~~

~~The 4 year breaker zone program started in 2008 is to be modified in 2010. In 2010 and 2011 AEP Ohio will do minimal clearing of the breaker zones of the remaining circuits. Vegetation within the breaker zones of these circuits will be addressed as necessary to carry them through to the planned end to end clearing of the circuit. Full end to end clearing will occur within one to two years of initially trimming the breaker zone.~~

~~The circuits are prioritized and work plans are developed based on historical tree related reliability performance and grouping of circuits served from the same substation for cost effectiveness.~~ AEP Ohio's work plans consist of removing or pruning trees in and out of right-of-way, pruning mature trees not in the line but that could be within a 4-year period, mowing overgrown right-of-way with a follow up herbicide application and removing overhang above multiphase lines. Overhang above single phase lines is either totally removed or removed to provide 10 feet of hinge or swing clearance above the conductor.

Tree removals are emphasized to promote long-term vegetation control. This requires a collaborative effort with property owners and community leaders. Soft wooded, fast growing tree species are removed where possible. Where removal permission is not obtained, fast growing species are pruned to greater clearances than slower growing varieties. Young trees of any species that have sprouted up naturally, commonly referred to as volunteer trees, are controlled with herbicides. Stump grinding/removal and/or tree replacements are offered on a limited basis as a tool to aid in securing permission for tree removals where there are easement related restrictions.

Once the annual work plan is developed, graphics personnel provide copies of the necessary detailed circuit maps to be used for the program. In addition, AEP Ohio personnel identify tree conditions through the course of their everyday work.

During planned clearing, each vegetation unit needing to be pruned, removed or other type of treatment is noted during a pre-planning process for each circuit. ~~These units are recorded on circuit maps and assigned to contractor tree crews to perform the work. Copies of the completed work plan maps and time sheets are kept on file at the offices of Forestry staff. AEP Ohio is currently investigating the use of GIS based mapping as an electronic planning and data collection tool for all future work planning. AEP Ohio has developed and adopted the use of a GIS based circuit mapping system (Smallworld) to capture this work plan information. This system was developed in collaboration with ArborMetrics Solutions Inc. and Asplundh Tree Expert Co. to electronically collect distribution forestry work plan data from each work planner while in the field. Each planner is provided a mobile computer with electronic maps for their assigned work areas. Planners can collect and record work information and routinely synch multiple times each work day with the ArborMetrics server to create a circuit work plan. Twice a week ArborMetrics sends that information to AEP servers where it is then loaded into and updates the Smallworld maps and is made available to the AEP Ohio distribution foresters for use. AEP foresters can develop and print a manifest document and circuit map for each specific circuit work project. A variety of information is collected for each circuit or portion of a circuit and includes such information as customer / landowner contact information, work units type and quantity, work hazards, location of the work, type of work needed, and special alerts. Currently this system is used only with AEP Ohio's primary vendor Asplundh Tree Expert Co; other contractors and some work plan information is still collected on paper maps.~~

A third party ~~auditor~~ inspector (ACRT) is currently used in conjunction with on-going AEP Ohio forestry staff inspections to assure work is completed to contract and guideline specifications. These inspections are filed in each forester's office and also entered in the RWM (Right-of-Way Maintenance) database.

Rule 11 Worst Performing Circuits – AEP Ohio annually submits to the PUCO a list of their 8% worst performing circuits. A number of these circuits have had tree-related outages and AEP Ohio Forestry works closely with the districts to develop comprehensive action plans to improve service reliability on these circuits.

Required work may involve extensive end-to-end clearing or isolated Quality of Service clearing (protective zone, one or more laterals, etc.) to address the tree reliability of the circuit. A specific forestry action plan is developed for each circuit in conjunction with the district's remedial plan to improve service reliability for each of these circuits.

Unscheduled Work – AEP Ohio Forestry deals with a dynamic, living system. Variables such as tree species, weather patterns and soil conditions all affect initial tree growth and the re-growth rates of pruned trees. Examples include isolated stands of fast growing

trees or vines growing on AEP Ohio poles and hardware that may affect only a portion of the circuit's overall reliability.

Even the most aggressive line clearance program must still make allowances for responding to isolated tree-related outages, reliability issues and customer requests. AEP Ohio Forestry has traditionally dedicated a percentage of its total budget and crew strength for this type of work that is incremental to the work plan.

New Construction Clearing – AEP Ohio Forestry clears easements in advance of new line construction activities. This work is accomplished to establish an initial cleared width and height for the conductors. Subsequent re-clearings on these lines are based on the extent of initial clearing.

Storm Work – AEP Ohio foresters and contract tree crews respond to district requests to clear trees within AEP Ohio easements to restore electrical service during storm restoration efforts or to prevent an imminent outage or safety hazard.

Additional Program Basics

Customer Relations & Community Involvement

AEP Ohio values its customer relationships as much as our customers value their trees. Great efforts are made to strike a balance between service reliability and the homeowner's landscaped vegetation. AEP Ohio frequently utilizes telephone messages broadcast to all customers located on a circuit scheduled for vegetation work as a first notification of the work scheduled in the area. The messages notify the customer/landowner that a forestry representative will be in contact in the near future. Contract work planners utilize face-to-face communication and door cards to contact property owners before routine line clearance work is performed. Contact with local community leaders is also made prior to work beginning in many areas to assure trees located on municipal properties are properly maintained.

AEP Ohio has invested time and resources into public education concerning proper tree care and sound environmental practices. AEP Ohio's forestry group participates in many arboriculture organizations such as: National Arbor Day Foundation, Utility Arborist Association, International Society of Arboriculture, and other various state and local vegetation management organizations. Many of the staff are certified arborists and/or licensed by the Ohio Department of Agriculture for herbicide and tree growth regulator application. The AEP Ohio Forestry group has developed and distributes an all-purpose tree care book called 'The Right Tree.' AEP Ohio Forestry also conducts community forum presentations based on the 'The Right Tree' to local and regional groups.

While AEP Ohio Forestry has gone to great lengths to satisfy our customers there are times when a property owner lodges a complaint either directly to the companies or to the Commission. Forestry complaints can be grouped into two simplistic categories: a) a customer wants their tree(s) trimmed and it falls outside the scope of AEP Ohio's responsibility or AEP Ohio is unable to address the concern in a timeframe suitable to the

customer; b) AEP Ohio has worked on the property and the end result is undesirable to the customer. Complaints are viewed as inputs as to potential program changes and AEP Ohio works diligently to amicably resolve any differing points of view.

Maintenance

AEP Ohio has adopted clearing guidelines that provide ample clearances from conductors and appurtenances. Costs for right-of-way clearing are effectively managed through recently completed vegetation clearing contract bid process (RFP). Asplundh Tree Expert Company is AEP Ohio's primary clearing contractor, however, AEP Ohio also has in place contracts with multiple vegetation clearing vendors and annually requests firm clearing cost pricing (lump sum) for a percentage of the scheduled line miles that are worked each year. All contractors are required to use of manual and mechanical clearing methods and various chemical applications. Customers are notified of vegetation management to be done in their area. This communication enhances productivity and customer relations.

Aerial Saw Pruning

AEP Ohio contracts with Aerial Solutions, Inc. and Haverfield Aviation, Inc. to remove lateral vegetation growth from our rights-of-way using aerial saws. Suspended on a vertical boom beneath a helicopter, and powered by a separate motor, a series of rotary blades quickly, safely, and efficiently prune trees along the edge of the right-of-way. Rights-of-way maintained with the aerial saw normally possess the following characteristics: steep, mountainous terrain; limited access, and prohibitive costs to trim by conventional means. ~~On readily accessible lines, traditional tree trimming crews use bucket trucks or skidder mounted saws or hand climb each tree individually. In just a few hours the aerial saw can clear remote lines that would take ground crews weeks or months to complete.~~

The aerial saw eliminates the need for workers to enter private property to reach rights-of-way. There is no need to make repeated trips across private property, eliminating the possibility of damaging lands by hauling heavy equipment across a customer's property. ~~The aerial saw also eliminates the need for workers to climb countless trees in close proximity to energized conductors, which reduces the opportunity for personal injury accidents.~~ Slash, brush and other debris from aerial saw operations is left along the edge of the right-of-way or mowed, leaving the center open for line access. This debris would also be left on site were AEP Ohio Forestry to clear these lines using conventional means. ~~Any brush that falls into roadways, waterways, fences or pastures is moved to a wooded edge of the right-of-way or is chipped or mowed. Clearing lines with the aerial saw prevents countless numbers of outages. Pilot training, radio contact and ground observers have significantly reduced the number of limb contacts with the line. Finally, brush growing on the floor of the right of way may be mowed or treated with a herbicide in advance of using the aerial saw to aid in increasing the pilot's visibility. The aerial saw is a powerful, cost effective tool enabling AEP Ohio Forestry to maintain more miles of line each year efficiently and improving overall system reliability.~~

Tree Growth Regulators

AEP Ohio employs the use of Tree Growth Regulators (TGRs), on a limited basis to control crown growth and reduce the frequency and amount that trees must be trimmed. TGRs control ~~regrowth~~ ~~re-growth~~, allowing a tree to use its reserves to survive disease and insect attacks, and to withstand environmental assaults such as drought and pollution.

A treated tree grows more slowly, and requires less trimming meaning less biomass is removed when they are pruned. That results in a healthier, more natural-looking tree, and fewer visits from contract tree crews. TGR products reduce tree growth for two to eight years, depending on species, rates of growth and other environmental conditions.

Analysis/Assessment

A monthly review is conducted to determine if each area is meeting planned right-of-way clearing goals. This includes addressing the volume of work for worst performing circuits. Any necessary adjustments are made at this time, which would move work forces onto circuits with tree-related concerns or change the number of crews to solve any problems. Circuit reliability is continually monitored to address tree-related issues. Work force productivity is also reviewed to provide the most cost effective management of these forces. Tree crew sizes or types may be altered and different equipment or right-of-way maintenance techniques employed to insure the work is completed in an efficient manner.

Maintenance

~~AEP Ohio has adopted clearing guidelines that provide ample clearances from conductors and appurtenances. Costs for right of way clearing are effectively managed through our sole source contract with Asplundh Tree Expert Company, use of manual and mechanical clearing methods and various chemical applications. Customers are notified of vegetation management to be done in their area. This communication enhances productivity and customer relations.~~

Records/Reporting

RWM is an internally developed invoicing and data collection program that AEP Ohio utilizes to collect information and data from the contractors timesheets. Electronic invoicing is available for all contractors for payment through this system and information regarding circuit costs to clear, man-hours per work unit, and costs per work unit are collected. Various reports are available in RWM which help to monitor program effectiveness, contractor productivity and costs. The reports are available by distribution circuit, area and district within the program.

Transmission: Right-of-Way Vegetation Control

Program Details

Objective

The primary objective of the AEP Vegetation Management Program is to safeguard public and worker safety, prevent outages and to minimize reliability events from vegetation located within and adjacent to the rights-of-way in a safe, environmentally friendly, and cost-effective manner. AEP's vegetation management program is compliant with NERC FAC-003-1, which governs vegetation maintenance on lines operating at 200 kV and higher.

Inspection/Collection

AEP foresters conduct aerial patrols, except where the Federal Aviation Administration (FAA) or other ordinance prohibits flight, covering substantial portions of the transmission system to identify areas where attention may be needed to prevent vegetation from interfering with circuit operation. Where flights are prohibited, foot patrols are used to identify areas requiring maintenance.

Analysis/Assessment

Circuit criticality, historical data, line voltage, location, vegetative inventory information and land use are among the items considered when developing the annual vegetation management plan.

Outcome/Incorporation

The key measure of success is zero vegetation-related outages or operations on AEP's transmission system with a goal of achieving 25% less vegetation grow-in events over a 3-year period based upon 2005 statistics. AEP has a database called Transmission Operating Reporting System (TORS) that is used to track the operating record for each transmission line. A monthly TORS report is monitored to assess current vegetation reliability conditions or trends that may require mitigation measures.

Maintenance Activities

The AEP System Vegetation Management Program emphasizes tree removal to promote longterm vegetation control and to minimize future maintenance expenditures. AEP vegetation maintenance activities may consist of manually or mechanically removing and/or trimming trees in and out of the rights-of-way, selective or broadcast applications of herbicides, either aerially or from the ground, and the application of tree growth regulators.

Maintenance Frequency

Transmission Vegetation Management Program frequency is conditioned based and is not performed on a time based frequency schedule.

Records

A systematic vegetation management work plan is annually entered into Forestry Operation's Right of Way Maintenance (RWM) software system to allow tracking and

reporting of each year's progress and expenses. At the end of the calendar vegetation management cycle an annual completion report, including variances, is analyzed to provide guidance toward future plans.

General Discussion

The System Forestry group of AEP manages the vegetation along the transmission rights-of-way in Ohio. This is done through the implementation of a comprehensive, systematic integrated vegetation management (IVM) program designed to ensure that the vegetation along each transmission line is managed at the proper time, and in the most cost-effective and environmentally sound manner. AEP System Forestry is a centralized organization in both reporting and budgeting and primarily employs degreed foresters to oversee this program.

AEP's transmission system is managed on a prescriptive basis. Ongoing evaluation of the system, through comprehensive ground and aerial inspections by both Transmission Line and System Forestry personnel, provides the basic information used by System Forestry to develop its prescriptions. Additionally, line criticality, historical data, line voltage, location, vegetative inventory information and land use are among the items considered when developing management prescriptions. Factors considered by AEP when developing annual prescriptions include, but are not limited to:

- A priority and schedule of treatment by line/circuit;
- Type of treatment (mechanical, manual, herbicide) based on vegetative and environmental conditions;
- Cost of treatment

As succession occurs within the plant communities along the rights-of-way, these work prescriptions will change based on the sizes and types of vegetation present. Prescriptions, therefore, may include several activities such as tree trimming, tree removal, mechanical clearing and ground and aerial herbicide applications. Subsequent prescriptions may address isolated locations requiring "yard tree" trimming, the removal of danger trees outside the maintained rights-of-way or control of fast growing brush, before the line is again maintained in its entirety. AEP's System Forestry staff and its contractors continuously work to ensure the appropriate prescription is utilized to maximize effectiveness and efficiency.

Certified utility line clearance contractors provide the labor force for the ground based clearing and herbicide applications. FAA-licensed aerial contractors provide patrol, side trimming and herbicide application services. Contract work is designated and inspected by AEP foresters to ensure that the work is complete, performed in a timely manner, to AEP and industry standards, at reasonable cost, and with courtesy to property owners and to the public. Foresters travel throughout their assigned regions of the AEP companies to accomplish these tasks.

AEP Vegetation Management Program Elements

- Inspections
- Annual Work Plan

- **Unscheduled Work**
- **Storm Work**

Inspections – In general, 100% of the AEP transmission system is inspected each year by AEP Forestry. The vast majority of these miles are inspected aerially, wherever the FAA or other similar law or ordinance does not prohibit overhead flight, and locations of concern are noted using inspection forms, which are forwarded to AEP foresters. Forestry personnel investigate all observed and reported concerns and take appropriate actions to mitigate any threat to safety or reliability.

Detailed climbing inspections and/or ground patrols are also performed periodically by line maintenance crews on the AEP transmission system. Locations of concern identified during these “walking” inspections are also directed to AEP foresters for investigation and action. AEP foresters check locations of concern and appropriate actions are taken.

Annual Work Plan – Using inspection information and data from AEP asset managers, each line is prioritized based on its potential for tree-caused outages, criticality of the line, voltage, etc. For lines requiring attention, AEP work plans may consist of manually or mechanically removing and/or trimming trees on and off the rights-of-way, selective or broadcast applications of herbicides, either aerially or from the ground, and the application of tree growth regulators. The range of required work may either involve management of the vegetation along the entire line or simply addressing individual locations of concern. Site conditions, growth rates, length of time until the next anticipated maintenance, wind and conductor sag are all taken into consideration when determining which maintenance practices must be applied.

Transmission work plans are normally developed in the fall of the preceding year, and input from asset managers and line maintenance personnel is solicited during development. Finalized plans are normally presented to all interested parties for approval before being initiated.

AEP’s program is an integrated vegetation management program utilizing a variety of management techniques depending upon the condition of the vegetation and the management tool to be applied.

Unscheduled Work – Forestry deals with a dynamic, living system. Variables such as tree species, weather patterns and soil conditions all affect tree growth and the regrowth rates of trimmed trees.

Even the most comprehensive line clearance program must make allowances for responding to isolated vegetation-related threats and customer requests. AEP Forestry has traditionally dedicated a portion of its total budget and crew strength to this type of work that is incremental to the work plan. Such work may include isolated stands of fast growing trees, vines growing on AEP poles and hardware, fire or insect damaged stands adjacent to the rights-of-way, or trees located in slips or slide areas.

Storm Work – AEP foresters and contract tree crews respond as required to trim, remove and clear trees within AEP easements to restore electrical service during storms or to prevent an imminent outage or safety hazard.

Additional Program Basics

Customer Relations & Community Involvement

Forestry personnel utilize face-to-face communication and door cards to contact resident property owners before routine line clearance work is done. AEP has invested time and resources into public education concerning proper tree care and sound environmental practices. AEP System Forestry participates in many organizations such as the National Arbor Day Foundation, the Utility Arborist Association, the International Society of Arboriculture, the U. S. Environmental Protection Agency's *Pesticide Environmental Stewardship Program*, and various state and local vegetation management organizations. AEP Corporate Communications in cooperation with Transmission Management has produced a brochure, *Transmission Right of Way Clearing and Maintenance, A Balanced Approach to Vegetation Management*, which is given to landowners and other community groups, outlining general policies for AEP's Transmission vegetation management program.

While AEP Forestry goes to great lengths to satisfy our customers there are times when a homeowner lodges a complaint either directly to AEP or to a state commission. Forestry complaints can be grouped into two categories: a) a customer wants their tree pruned and it falls outside the scope of AEP responsibility or AEP is unable to prune it in a timeframe suitable to the customer; and, b) AEP has pruned a tree and the result is unacceptable to the customer. Complaints are viewed as advice on potential program changes, and AEP works diligently to amicably resolve any differing points of view.

Tree Growth Regulators

Caring for trees under power lines requires regular pruning. Each new pruning places a tree under stress because it removes leaves and branches, which manufacture and store nutrients. This forces the tree to tap its reserves to grow new wood. Tree Growth Regulators (TGRs) control crown growth and reduce the frequency and amount that trees must be trimmed. TGRs control regrowth, allowing a tree to use its reserves to survive disease and insect attacks, and to withstand environmental assaults like drought and pollution.

A treated tree grows more slowly and requires less pruning, meaning fewer branches may be removed when it is re-pruned. That means a healthier, more natural-looking tree, and fewer visits from line clearance crews. TGR products reduce tree growth for two to eight years, depending on species, application rates and other environmental conditions.

Summary

AEP System Forestry continually seeks technological innovations and process improvements to maintain our vegetation management program as one of the best in the industry. AEP System Forestry personnel participate in and/or lead vegetation

management organizations such as: the Edison Electric Institute's Vegetation Management Task Force, the International Society of Arboriculture, the Utility Arborist Association, the U.S. EPA's Pesticide Environmental Stewardship Program, numerous state or regional vegetation management associations and numerous state and local urban and community forestry councils.

ATTACHMENT 2

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An effective vegetation management program will prescribe a maintenance plan for each circuit being addressed. The program should utilize best practices and prescriptions should take into account the location of rights-of-way, the types of vegetation present, the environmental impact of the work being performed and any restrictions in the program plan. This approach is referred to as an integrated vegetation management plan or IVM. The considerations to be taken into account include, but are not limited to:

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outages and AEP Ohio Forestry works closely with the districts to develop comprehensive action plans to improve service reliability on these circuits.

Required work may involve extensive end-to-end clearing or isolated Quality of Service clearing (protective zone, one or more laterals, etc.) to address the tree reliability of the circuit. A specific forestry action plan is developed for each circuit in conjunction with the district's remedial plan to improve service reliability for each of these circuits.

Unscheduled Work – AEP Ohio Forestry deals with a dynamic, living system. Variables such as tree species, weather patterns and soil conditions all affect initial tree growth and the re-growth rates of pruned trees. Examples include isolated stands of fast growing trees or vines growing on AEP Ohio poles and hardware that may affect only a portion of the circuit's overall reliability.

Even the most aggressive line clearance program must still make allowances for responding to isolated tree-related outages, reliability issues and customer requests. AEP Ohio Forestry has traditionally dedicated a percentage of its total budget and crew strength for this type of work that is incremental to the work plan.

New Construction Clearing – AEP Ohio Forestry clears easements in advance of new line construction activities. This work is accomplished to establish an initial cleared width and height for the conductors. Subsequent re-clearings on these lines are based on the extent of initial clearing.

Storm Work – AEP Ohio foresters and contract tree crews respond to district requests to clear trees within AEP Ohio easements to restore electrical service during storm restoration efforts or to prevent an imminent outage or safety hazard.

Additional Program Basics

Customer Relations & Community Involvement

AEP Ohio values its customer relationships as much as our customers value their trees. Great efforts are made to strike a balance between service reliability and the homeowner's landscaped vegetation. AEP Ohio frequently utilizes telephone messages broadcast to all customers located on a circuit scheduled for vegetation work as a first notification of the work scheduled in the area. The messages notify the customer/landowner that a forestry representative will be in contact in the near future. Contract work planners utilize face-to-face communication and door cards to contact property owners before routine line clearance work is performed. Contact with local community leaders is also made prior to work beginning in many areas to assure trees located on municipal properties are properly maintained.

AEP Ohio has invested time and resources into public education concerning proper tree care and sound environmental practices. AEP Ohio's forestry group participates in many arboriculture organizations such as: National Arbor Day Foundation, Utility Arborist Association, International Society of Arboriculture, and other various state and local

vegetation management organizations. All of the distribution forestry staff are certified arborists and/or licensed by the Ohio Department of Agriculture for herbicide and tree growth regulator application. The AEP Ohio Forestry group has developed and distributes an all-purpose tree care book called 'The Right Tree.' AEP Ohio Forestry also conducts community forum presentations based on the 'The Right Tree' to local and regional groups.

While AEP Ohio Forestry has gone to great lengths to satisfy our customers there are times when a property owner lodges a complaint either directly to the companies or to the Commission. Forestry complaints can be grouped into two simplistic categories: a) a customer wants their tree(s) trimmed and it falls outside the scope of AEP Ohio's responsibility or AEP Ohio is unable to address the concern in a timeframe suitable to the customer; b) AEP Ohio has worked on the property and the end result is undesirable to the customer. Complaints are viewed as inputs as to potential program changes and AEP Ohio works diligently to amicably resolve any differing points of view.

Maintenance

AEP Ohio has adopted clearing guidelines that provide ample clearances from conductors and appurtenances. Costs for right-of-way clearing are effectively managed through recently completed vegetation clearing contract bid process (RFP). Asplundh Tree Expert Company is AEP Ohio's primary clearing contractor, however, AEP Ohio also has in place contracts with multiple vegetation clearing vendors and annually requests firm clearing cost pricing (lump sum) for a percentage of the scheduled line miles that are worked each year. All contractors are required to use of manual and mechanical clearing methods and various chemical applications. Customers are notified of vegetation management to be done in their area. This communication enhances productivity and customer relations.

Aerial Saw Pruning

AEP Ohio contracts with Aerial Solutions, Inc. and Haverfield Aviation, Inc. to remove lateral vegetation growth from our rights-of-way using aerial saws. Suspended on a vertical boom beneath a helicopter, and powered by a separate motor, a series of rotary blades quickly, safely, and efficiently prune trees along the edge of the right-of-way. Rights-of-way maintained with the aerial saw normally possess the following characteristics: steep, mountainous terrain; limited access, and prohibitive costs to trim by conventional means.

The aerial saw eliminates the need for workers to enter private property to reach rights-of-way. There is no need to make repeated trips across private property, eliminating the possibility of damaging lands by hauling heavy equipment across a customer's property. Slash, brush and other debris from aerial saw operations is left along the edge of the right-of-way or mowed, leaving the center open for line access. This debris would also be left on site were AEP Ohio Forestry to clear these lines using conventional means.

Tree Growth Regulators

AEP Ohio employs the use of Tree Growth Regulators (TGRs), on a limited basis to control crown growth and reduce the frequency and amount that trees must be trimmed. TGRs control re-growth, allowing a tree to use its reserves to survive disease and insect attacks, and to withstand environmental assaults such as drought and pollution.

A treated tree grows more slowly, and requires less trimming meaning less biomass is removed when they are pruned. That results in a healthier, more natural-looking tree, and fewer visits from contract tree crews. TGR products reduce tree growth for two to eight years, depending on species, rates of growth and other environmental conditions.

Analysis/Assessment

A monthly review is conducted to determine if each area is meeting planned right-of-way clearing goals. This includes addressing the volume of work for worst performing circuits. Any necessary adjustments are made at this time, which would move work forces onto circuits with tree-related concerns or change the number of crews to solve any problems. Circuit reliability is continually monitored to address tree-related issues. Work force productivity is also reviewed to provide the most cost effective management of these forces. Tree crew sizes or types may be altered and different equipment or right-of-way maintenance techniques employed to insure the work is completed in an efficient manner.

Records/Reporting

RWM is an internally developed invoicing and data collection program that AEP Ohio utilizes to collect information and data from the contractors timesheets. Electronic invoicing is available for all contractors for payment through this system and information regarding circuit costs to clear, man-hours per work unit, and costs per work unit are collected. Various reports are available in RWM which help to monitor program effectiveness, contractor productivity and costs. The reports are available by distribution circuit, area and district within the program.

Transmission: Right-of-Way Vegetation Control

Program Details

Objective

The primary objective of the AEP Vegetation Management Program is to safeguard public and worker safety, prevent outages and to minimize reliability events from vegetation located within and adjacent to the rights-of-way in a safe, environmentally friendly, and cost-effective manner. AEP's vegetation management program is compliant with NERC FAC-003-1, which governs vegetation maintenance on lines operating at 200 kV and higher.

Inspection/Collection

AEP foresters conduct aerial patrols, except where the Federal Aviation Administration (FAA) or other ordinance prohibits flight, covering substantial portions of the transmission system to identify areas where attention may be needed to prevent vegetation from interfering with circuit operation. Where flights are prohibited, foot patrols are used to identify areas requiring maintenance.

Analysis/Assessment

Circuit criticality, historical data, line voltage, location, vegetative inventory information and land use are among the items considered when developing the annual vegetation management plan.

Outcome/Incorporation

The key measure of success is zero vegetation-related outages or operations on AEP's transmission system with a goal of achieving 25% less vegetation grow-in events over a 3-year period based upon 2005 statistics. AEP has a database called Transmission Operating Reporting System (TORS) that is used to track the operating record for each transmission line. A monthly TORS report is monitored to assess current vegetation reliability conditions or trends that may require mitigation measures.

Maintenance Activities

The AEP System Vegetation Management Program emphasizes tree removal to promote longterm vegetation control and to minimize future maintenance expenditures. AEP vegetation maintenance activities may consist of manually or mechanically removing and/or trimming trees in and out of the rights-of-way, selective or broadcast applications of herbicides, either aerially or from the ground, and the application of tree growth regulators.

Maintenance Frequency

Transmission Vegetation Management Program frequency is conditioned based and is not performed on a time based frequency schedule.

Records

A systematic vegetation management work plan is annually entered into Forestry Operation's Right of Way Maintenance (RWM) software system to allow tracking and reporting of each year's progress and expenses. At the end of the calendar vegetation management cycle an annual completion report, including variances, is analyzed to provide guidance toward future plans.

General Discussion

The System Forestry group of AEP manages the vegetation along the transmission rights-of-way in Ohio. This is done through the implementation of a comprehensive, systematic integrated vegetation management (IVM) program designed to ensure that the vegetation along each transmission line is managed at the proper time, and in the most cost-effective and environmentally sound manner. AEP System Forestry is a centralized organization in both reporting and budgeting and primarily employs degreed foresters to oversee this program.

AEP's transmission system is managed on a prescriptive basis. Ongoing evaluation of the system, through comprehensive ground and aerial inspections by both Transmission Line and System Forestry personnel, provides the basic information used by System Forestry to develop its prescriptions. Additionally, line criticality, historical data, line voltage, location, vegetative inventory information and land use are among the items considered when developing management prescriptions. Factors considered by AEP when developing annual prescriptions include, but are not limited to:

- A priority and schedule of treatment by line/circuit;
- Type of treatment (mechanical, manual, herbicide) based on vegetative and environmental conditions;
- Cost of treatment

As succession occurs within the plant communities along the rights-of-way, these work prescriptions will change based on the sizes and types of vegetation present. Prescriptions, therefore, may include several activities such as tree trimming, tree removal, mechanical clearing and ground and aerial herbicide applications. Subsequent prescriptions may address isolated locations requiring "yard tree" trimming, the removal of danger trees outside the maintained rights-of-way or control of fast growing brush, before the line is again maintained in its entirety. AEP's System Forestry staff and its contractors continuously work to ensure the appropriate prescription is utilized to maximize effectiveness and efficiency.

Certified utility line clearance contractors provide the labor force for the ground based clearing and herbicide applications. FAA-licensed aerial contractors provide patrol, side trimming and herbicide application services. Contract work is designated and inspected by AEP foresters to ensure that the work is complete, performed in a timely manner, to AEP and industry standards, at reasonable cost, and with courtesy to property owners and to the public. Foresters travel throughout their assigned regions of the AEP companies to accomplish these tasks.

AEP Vegetation Management Program Elements

- Inspections
- Annual Work Plan
- Unscheduled Work
- Storm Work

Inspections – In general, 100% of the AEP transmission system is inspected each year by AEP Forestry. The vast majority of these miles are inspected aerially, wherever the FAA or other similar law or ordinance does not prohibit overhead flight, and locations of concern are noted using inspection forms, which are forwarded to AEP foresters. Forestry personnel investigate all observed and reported concerns and take appropriate actions to mitigate any threat to safety or reliability.

Detailed climbing inspections and/or ground patrols are also performed periodically by line maintenance crews on the AEP transmission system. Locations of concern identified during these “walking” inspections are also directed to AEP foresters for investigation and action. AEP foresters check locations of concern and appropriate actions are taken.

Annual Work Plan – Using inspection information and data from AEP asset managers, each line is prioritized based on its potential for tree-caused outages, criticality of the line, voltage, etc. For lines requiring attention, AEP work plans may consist of manually or mechanically removing and/or trimming trees on and off the rights-of-way, selective or broadcast applications of herbicides, either aerially or from the ground, and the application of tree growth regulators. The range of required work may either involve management of the vegetation along the entire line or simply addressing individual locations of concern. Site conditions, growth rates, length of time until the next anticipated maintenance, wind and conductor sag are all taken into consideration when determining which maintenance practices must be applied.

Transmission work plans are normally developed in the fall of the preceding year, and input from asset managers and line maintenance personnel is solicited during development. Finalized plans are normally presented to all interested parties for approval before being initiated.

AEP’s program is an integrated vegetation management program utilizing a variety of management techniques depending upon the condition of the vegetation and the management tool to be applied.

Unscheduled Work – Forestry deals with a dynamic, living system. Variables such as tree species, weather patterns and soil conditions all affect tree growth and the regrowth rates of trimmed trees.

Even the most comprehensive line clearance program must make allowances for responding to isolated vegetation-related threats and customer requests. AEP Forestry has traditionally dedicated a portion of its total budget and crew strength to this type of work that is incremental to the work plan. Such work may include isolated stands of fast

growing trees, vines growing on AEP poles and hardware, fire or insect damaged stands adjacent to the rights-of-way, or trees located in slips or slide areas.

Storm Work – AEP foresters and contract tree crews respond as required to trim, remove and clear trees within AEP easements to restore electrical service during storms or to prevent an imminent outage or safety hazard.

Additional Program Basics

Customer Relations & Community Involvement

Forestry personnel utilize face-to-face communication and door cards to contact resident property owners before routine line clearance work is done. AEP has invested time and resources into public education concerning proper tree care and sound environmental practices. AEP System Forestry participates in many organizations such as the National Arbor Day Foundation, the Utility Arborist Association, the International Society of Arboriculture, the U. S. Environmental Protection Agency's *Pesticide Environmental Stewardship Program*, and various state and local vegetation management organizations. AEP Corporate Communications in cooperation with Transmission Management has produced a brochure, *Transmission Right of Way Clearing and Maintenance, A Balanced Approach to Vegetation Management*, which is given to landowners and other community groups, outlining general policies for AEP's Transmission vegetation management program.

While AEP Forestry goes to great lengths to satisfy our customers there are times when a homeowner lodges a complaint either directly to AEP or to a state commission. Forestry complaints can be grouped into two categories: a) a customer wants their tree pruned and it falls outside the scope of AEP responsibility or AEP is unable to prune it in a timeframe suitable to the customer; and, b) AEP has pruned a tree and the result is unacceptable to the customer. Complaints are viewed as advice on potential program changes, and AEP works diligently to amicably resolve any differing points of view.

Tree Growth Regulators

Caring for trees under power lines requires regular pruning. Each new pruning places a tree under stress because it removes leaves and branches, which manufacture and store nutrients. This forces the tree to tap its reserves to grow new wood. Tree Growth Regulators (TGRs) control crown growth and reduce the frequency and amount that trees must be trimmed. TGRs control regrowth, allowing a tree to use its reserves to survive disease and insect attacks, and to withstand environmental assaults like drought and pollution.

A treated tree grows more slowly and requires less pruning, meaning fewer branches may be removed when it is re-pruned. That means a healthier, more natural-looking tree, and fewer visits from line clearance crews. TGR products reduce tree growth for two to eight years, depending on species, application rates and other environmental conditions.

Summary

AEP System Forestry continually seeks technological innovations and process improvements to maintain our vegetation management program as one of the best in the industry. AEP System Forestry personnel participate in and/or lead vegetation management organizations such as: the Edison Electric Institute's Vegetation Management Task Force, the International Society of Arboriculture, the Utility Arborist Association, the U.S. EPA's Pesticide Environmental Stewardship Program, numerous state or regional vegetation management associations and numerous state and local urban and community forestry councils.

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