

Midwest Vegetation Management Program

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SECTION 1 – GOAL, OBJECTIVE AND PURPOSE

Duke Energy's vegetation management goal is to balance the need for safe and reliable utility service with safe and cost-effective vegetation management practices.

The primary objective of the Duke Energy Midwest Vegetation Management Program (DEM VMP) is to control the growth of incompatible vegetation along its electric lines in order to help provide safe and reliable service to our customers. This is accomplished by using qualified personnel to monitor the condition of the utility rights-of-way and by initiating various vegetation control practices to reduce, manage or eliminate incompatible growth. This integrated vegetation management program is essential in providing safe and reliable electric service by ensuring that trees and brush near or within rights-of-way are periodically trimmed or removed to help reduce potential outages and hazards near our facilities.

The consistent implementation of industry accepted vegetation management practices reduces the likelihood of tree and power line conflicts, as well as service interruptions, and allows for the full utilization of the operating system.

SECTION 2 – **DEFINITIONS**

ANSI A300- American National Standards Institute (ANSI) A300 for Tree Care Operations, provides the generally accepted industry performance standards for the care and management of trees, shrubs, and other woody plants.

BRUSH- A perennial woody stem less than six inches DBH (diameter at breast height) in an unmaintained or natural area is classified as brush.

CONTRACTOR- Corporation to whom the Vegetation Management work is awarded.

HAZARD TREES- A tree that is dead, structurally unsound, diseased, shallow-rooted, leaning or otherwise defective that could strike electrical lines or equipment of the distribution or transmission system if it falls or is cut.

INTEGRATED VEGETATION MANAGEMENT- Vegetation plan that combines various components including pruning, mowing and herbicide applications to manage the growth of vegetation on the electric utility rights-of-way.

LEGAL- Duke Energy Legal Department.

PRIMARY LINE- Electric conductor(s) that carry greater than 600 volts of electricity.

RIGHT-OF-WAY (ROW)- A strip of land that an electric utility uses to construct, operate, inspect, maintain, repair or replace an overhead or underground power line. The ROW allows the utility to provide clearance from trees, buildings and other structures that could interfere with the line installation, maintenance and operation. ROW may include licenses, easements and other rights to access property.

ASSET PROTECTION- Duke Energy department that oversees right-of-way issues.

SECONDARY LINE- Electric conductor(s) that carry 600 volts or less of electricity.

SINGLE PHASE- A type of electric power line construction that contains one conductor carrying primary voltage.

THREE PHASE- A type of electric power line construction that contains three conductors carrying primary voltage.

TRANSMISSION LINE- a set of electrical conductors that carry 69 kV or more of electricity.

TWO PHASE- A type of electric power line construction that contains two conductors carrying primary voltage.

TREE- A perennial woody stem equal or greater than six inches in DBH (diameter at breast height) is classified as a tree.

SECTION 3 – *FEDERAL, STATE, LOCAL LAWS*

Contractor shall perform all work in conformance with DEM VMP requirements and work specifications, Occupational Health and Safety Administration (OSHA) regulations, American National Standards Institute (ANSI) A300 and Z133, and all federal, state, county, and municipal laws, ordinances and regulations applicable to said work.

The governing entities include but are not limited to:

Indiana Utility Regulatory Commission
Indiana Department of Transportation
Kentucky Public Service Commission
Kentucky Department of Transportation
Public Utility Commission of Ohio
Ohio Department of Transportation
Kentucky Agriculture Pesticide Department
Ohio Agriculture Pesticide Department
Hamilton County Park Division
Cincinnati Forestry Department
Butler County Park Division
Department of Natural Resources
Occupational Health and Safety Administration (OSHA)
Indiana Department of Environmental Management
American National Standards Institute (ANSI)

SECTION 4 – *PROPERTY ACCESS RIGHTS / REQUIREMENTS*

The rights to access, inspect, or perform the work associated with vegetation management practices include, but are not limited to, established legal instruments, easements, public road rights-of-way, municipal ordinances, state statutes, regulatory rules, tariffs and other legal authority. The Duke Energy Midwest Vegetation Management (DEM VM) Specialist should, when necessary, utilize the available supporting documents to pursue the completion of necessary work activities in order to maintain vegetation growth to the established standards of acceptance in the provision of safe and reliable electric service. If there are objections, restrictions or limitations that prevent completion of the necessary work activities, the DEM VM Specialist should contact the Right-of-Way Services Department or Legal Department for specialized assistance.

A list of items to determine property access rights include, but are not limited to:

- Existing property easement, prescriptive easements, public road rights-of-way and / or agreements
- State statutes
- Municipal codes
- Commission rules and regulations
- Customer consent

SECTION 5 – **WORK QUALITY AND SAFETY STANDARDS**

All work shall be performed in conformance with DEM VMP Requirements, OSHA regulations, American National Standards Institute (ANSI) A300, ANSI Z133, Tree Care Industry Association's (formerly the National Arborist Association) standards, Dr. Shigo's *Field Guide for Qualified Line Clearance Tree Workers*, National Electrical Safety Code (NESC), International Society of Arboriculture Best Management Practices, and all federal, state, county, and municipal laws, statutes, ordinances and regulations applicable to said work.

Clearance to obtain safety and reliable electric service are based on, but not limited to, consideration of the following:

National Electrical Safety Code (NESC)

ANSI A300 Standard - American National Standards Institute A300 for Tree Care Operations

ANSI Z133 Standard - American National Standards Institute Z133 for Tree Care Operations - Safety Requirements

OSHA Standard 29 CFR 1910.269 - Occupational Safety and Health Administration Standard 29 CFR 1910.269 (a)(1)(i)(E) for Electric Power Generation, Transmission, and Distribution

Field Guide for Qualified Line Clearance Tree Workers by Dr. Alex Shigo

SECTION 6 – CLEARANCE SPECIFICATIONS AT THE TIME OF ROUTINE MAINTENANCE

TRANSMISSION CONDUCTORS 230KV AND 345KV

- As a best practice, the ROW should be maintained to the outside edge of ROW
- No overhanging/encroaching branches permitted
- DEM VMP's goal is to eliminate any incompatible vegetation within the maintained ROW

TRANSMISSION CONDUCTORS 69KV AND 138KV

- Minimum of 15 feet clearance to the side of all conductors
- Minimum of 15 feet clearance below the lowest conductor
- No overhanging/encroaching branches permitted
- As a best practice, the ROW should be maintained to the outside edge of ROW
- DEM VMP's goal is to eliminate any incompatible vegetation within the maintained ROW that has a mature height of greater than 15 feet

TWO AND THREE PHASE PRIMARY DISTRIBUTION LINES

- Minimum of 10 feet clearance to the side from all conductors or to the previously established width
- Underneath the primary: minimum of 10 feet clearance below the conductors
- Overhanging branches above the conductors shall be removed unless identified as structurally sound and established

SINGLE PHASE PRIMARY DISTRIBUTION LINES

- Minimum of 10 feet clearance to the side from all conductors or to the previously established width
- Underneath the primary: minimum of 10 feet clearance below the conductors
- Overhanging branches above the conductors shall be removed to a minimum height of 15 feet, and at a 45-degree angle. All dead and structurally weak branches overhanging any primary voltage wires shall be removed

OPEN WIRE SECONDARY LINES

- 5 feet clearance to the side from open wire secondary lines
- 5 feet clearance above and below open wire secondaries

SERVICE CONDUCTORS AND STREET LIGHT CONDUCTORS

Pruned to remove any obvious line-damaging limbs in contact with the conductors



SECTION 7 – *INSPECTION AND MONITORING*

Aerial inspections shall be performed on each transmission circuit (69kv and above) a minimum of two times per year in order to observe vegetation conditions on the transmission system. These aerial inspections may be coordinated with routine transmission facility inspections but should provide for the capabilities to specifically identify unsuitable vegetation conditions.

Any unsuitable vegetation conditions shall be noted along with location, structure numbers, or other information that will provide details necessary to return to the location by ground to address the condition. This information shall also be recorded in the appropriate database logs.

Vegetation conditions observed that pose an immediate threat to the operation of the line or public safety shall be reported immediately to the Duke Energy System Operations Control Center and the Duke Energy Midwest Vegetation Management (DEM VM) Specialist responsible for that area.

Vegetation related ground inspections shall be performed on an as needed basis as determined by the field DEM VM Specialist.

SECTION 8 – VEGETATION CONTROL METHODS

- **TREE SIDE TRIMMING-** Trees found along the right-of-way edge will, in most cases, encroach upon the electrical conductors through the side growth of their limbs. The maintenance of these trees requires the removal or partial removal of those potentially interfering limbs. Industry standards dictate the proper methods of “pruning” such limbs so as to minimize any damages to the tree. These methods are referred to as natural trimming, drop crotch or lateral trimming techniques. Stubbing and tearing of bark shall be avoided. Tree trimming may be performed by aerial buckets where accessibility permits. In some areas that are less accessible, off-road buckets may be assigned to perform the work. In other remote areas, boom mounted cutting devices or helicopters may be employed to perform the pruning activities. In terrain where no mechanical equipment can access the trees at issue, the contractor may resort to manual climbing of the trees in order to perform the pruning operations.
- **HAZARD TREE REMOVALS-** Trees found adjacent to or within the right-of way that are dead, structurally unsound, diseased, shallow-rooted, leaning or otherwise defective that could strike electrical lines or equipment of the distribution or transmission system that are cut down. Stumps from downed (live) trees shall be treated with herbicides where appropriate and possible.
- **TREE REMOVALS-** Trees which are in close proximity to electrical facilities can require a substantial amount of maintenance in order to prevent them from causing reliability problems. In many cases these trees must be pruned extensively. These trees may be identified for removal and the property owners are consulted.
- **BRUSH REMOVAL-** Incompatible brush within the transmission and distribution right-of-way corridors is eliminated if possible. When such vegetation is eliminated, it will normally be cut down either by manual or mechanical means. If the stems are of a smaller size or are a result of the re-sprouting of previously removed stems, the vegetation may be controlled by the application of approved and environmentally acceptable herbicides, and applied in compliance with all applicable regulations. All chemicals used in line clearing operations shall be registered with the EPA, the applicable Ohio, Indiana and/or Kentucky regulating state authority and are subject to approval by DEM VMP.
- **RIGHT-OF-WAY MOWING-** In situations where brush height is of significant size and therefore not conducive to herbicide applications, the right-of-way may be mechanically mowed with brush hogs or other mowing equipment. This equipment is typically used where there are substantial areas of such brush along with heavy densities.
- **HERBICIDE-** Because of a variety of terrain, differences in soil, land use, and vegetation types, we use integrated vegetation management practices which include environmentally acceptable chemical control methods as a supplement or substitute to mowing or hand cutting.



SECTION 9 – **CONTRACTOR RESPONSIBILITIES**

STANDARDS TO FOLLOW- Contractor shall perform all work in conformance with DEM VMP requirements, OSHA regulations, ANSI 300, ANSI Z133, Tree Care Industry Association's (formerly the National Arborist Association) standards, Dr. Shigo's *Field Guide for Qualified Line Clearance Tree Workers*, NESC, International Society of Arboriculture Best Management Practices and all federal, state, county, and municipal laws, ordinances, rules and regulations applicable to said work.

INCLUSIONS- Contractor shall furnish all labor, tools, transportation, equipment and materials necessary to perform the work. Herbicides used for stump treatment during maintenance operations in compliance with these specifications shall be furnished by the Contractor.

SUPERVISION AND OVERSIGHT- Contractor must have on-site supervision responsible for all work in each area that work is undertaken. Each supervisor, general foreman and/or lead person on miscellaneous work crews (reactive crews) must have a cellular phone or other suitable method of communications. Contractor must make all telephone numbers available to Duke Energy representatives. All other crews must have a suitable means of communication to respond to emergencies and daily work needs. The Contractor must provide the location of office facilities, contact names and telephone numbers for all supervisors and general foremen to Duke Energy prior to the commencement of any work under the contract. Contractor shall immediately advise the DE VM Specialist of any changes in the contact names and numbers as they occur.

RESPONSE- Contractor agrees that supervisors or general foremen shall respond to Duke Energy or property owner/customer calls within one hour of the call during the day and two hours at night. Contractor agrees to make available at least one general foreman per designated area at all times during the term of the contract. The number of general foremen required may vary depending upon the areas awarded.

COMMUNICATIONS- Contractor must have at least one English speaking employee per work group.

REPORTING- Contractor shall work with DE VM Specialist(s) to determine crew reporting procedures and ensure that the DE VM Specialist(s) are aware of crew locations. Contractor is also responsible for ensuring that notification is given if any work under the contract is suspended or stopped during normally scheduled times.

PERSONNEL TRAINING- Contractor shall be responsible for its personnel completing training and demonstrating necessary levels of competence to perform the work. Duke Energy shall not be obligated to pay for services performed by personnel who have not been trained and who have not demonstrated competence. Contractor shall have and maintain all relevant employee documentation. Contractor shall comply with all applicable laws that may impact Contractor's employment obligations under the contract agreement, including the Immigration Reform and Control Act of 1986 and Form I-9 requirements. Without limiting the generality of the foregoing, Contractor shall perform all required employment



eligibility and verification checks and maintain all required employment records as specified in their contracts.

FITNESS FOR DUTY- Contractor shall be responsible for its personnel's compliance with Duke Energy's hygiene and substance abuse requirements. Contractor's employees, agents or other personnel shall begin each day in clean, neat clothing, and shall observe all Duke Energy hygiene regulations and rules in effect while at the locations. Duke Energy has an Alcohol/Drug Abuse Procedure included in its Fitness For Duty Policy. Copies of said Fitness For Duty Policy and Alcohol Drug Abuse Procedure shall be supplied to Contractor by Duke Energy. Under said Alcohol/Drug Abuse Procedure, Contractor shall be considered to be a supplier performing sensitive services for Duke Energy. Contractor shall therefore implement and administer an alcohol/drug abuse policy acceptable to Duke Energy and at least as stringent as that of Duke Energy. Contractor agrees that Duke Energy and/or its agents shall be permitted access to Contractor's documentation of Contractor's alcohol/drug abuse policy as necessary for Duke Energy to evaluate conformity with the policy.

PUBLIC REPRESENTATION- Contractor acknowledges and agrees that the personnel it retains or hires to perform the work give the impression to the public that they represent Duke Energy. Accordingly, such personnel must be respectful, professional and courteous. Contractor will provide and maintain vehicles, equipment and tools that are safe to operate and present a positive public image. All Contractors' vehicles shall have a standard decal identifying the contract company. Contractor shall provide its employees with cards to distribute to customers/property owners on request. Cards should provide the name and telephone number of a supervisor or general foreman who can be reached about service, inquiries or claims. All contractor employees shall carry identification and provide it for inspections upon request.

SOLICITATION- Neither Contractor, nor Contractor's personnel, shall during hours worked pursuant to the contract, solicit work from, or propose sales to customers of Duke Energy or its affiliated utilities.

CUSTOMER NOTIFICATION- Contractor shall comply with State notice requirements. Contractor shall notify the property owner or the owner's agent of upcoming work by means of oral communication, notification letters, brochures, and/or door hangers. This communication shall occur within a minimum of fourteen calendar days prior to commencement of the work. If notification is done orally, the door hanger materials and information shall be given to the property owner or the owner's agent. Duke Energy will provide the door hangers and associated materials, which will describe the work. Contractor shall attach as part of the door hanger and associated materials a telephone number for the Contractor's supervisor or general foreman.

CONTRACTOR SAFETY- Accidents, injuries, near misses, and Contractor caused interruptions, involving the public or Contractor personnel must be reported to appropriate Duke Energy personnel. In case of power interruption or damage, the Contractor shall notify the Owner immediately. The Contractor shall conduct a prompt and thorough investigation of such incidents. Contractor and/or its liability or other insurance carrier shall conduct a prompt and thorough investigation of such incidents and provide the DE VM Specialist with an accident investigation report within five business days of the occurrence.