STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

INVESTIGATION BY THE INDIANA UTILITY REGULATORY COMMISSION, UNDER IC §§ 8-1-2-58 AND 59, TO INVESTIGATE ELECTRIC UTILITY TREE-TRIMMING PRACTICES AND TARIFFS RELATING TO SERVICE QUALITY IN THE STATE OF INDIANA.	)	**CAUSE NO. 43663**
RESPONDENTS: ALL INDIANA JURISDICTIONAL ELECTRIC UTILITIES	)	

DUKE ENERGY INDIANA'S SUBMISSION OF 2019 VEGETATION MANAGEMENT REPORT AND VEGETATION MANAGEMENT PLAN

Respondent Duke Energy Indiana, LLC hereby submits its 2019 Vegetation Management Report and Vegetation Management Plan in accordance with the November 30, 2010 Order in this Cause.

Respectfully submitted,

DUKE ENERGY INDIANA, LLC

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing submission was delivered electronically this 31st day of March 2020, to the following:

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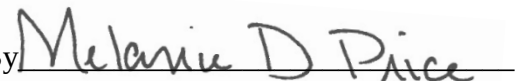
By 
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Duke Energy Indiana

Annual Vegetation Management Report for Calendar Year 2019

Cause No. 43663

2019 Vegetation Management – Financial Report (Budget vs. Actual)

2019 Original Budget: $36,688,328

2019 Actual Expenditures: $63,747,513

The above reflects the expenditures associated with the vegetation management program to support approximately 16,000 distribution miles and approximately 6,000 transmission miles in the State of Indiana. The above dollars exclude expenses incurred on major event days as defined by the major event day methodology detailed in “IEEE Std. 1366, IEEE Guide for Electric Power Distribution Reliability Indices”.

2019 Vegetation Management Reliability Report (Tree SAIFI):

Total Tree System Average Interruption Frequency “SAIFI”: 0.24

Total Indiana SAIFI from all causes for 2019 is 1.06. Tree SAIFI was approximately 24% of total Indiana SAIFI.

Tree SAIFI is defined as System Average Interruption Frequency Index for tree related events only. The SAIFI index is the average number of interruptions a customer would expect to have over a given period of time that were caused by trees in the State of Indiana.

The above indices exclude major event days as defined by the major event day methodology detailed in “*IEEE Std. 1366, IEEE Guide for Electric Power Distribution Reliability Indices*”.

2019 Vegetation Management Customer Complaints Report

With regard to customer complaints, Duke Energy tracks in detail tree trimming and vegetation management inquiries or complaints that are filed with the Commission. For the purpose of this annual report, Duke Energy Indiana has included the customer concerns that were not resolved in the field and were escalated to management for resolution. Duke Energy Indiana had 25 customer complaints related to tree trimming/vegetation management and 4 were carried over from 2018; 25 were informal complaints to the Indiana Utility Regulatory Commission's ("Commission") Consumer Affairs Division that have been reviewed and closed and 1 is open. There were 9 complaints referred to management, including two carry overs from 2018, which were reviewed as noted with seven closed and two pending. Please note that those complaints marked with an asterisk (*) are all in one neighborhood affected by vegetation management activities on a Company-owned transmission line.

Duke Energy Indiana uses advance customer notification as well as its Call Center to minimize and manage inquiries related to tree trimming and vegetation management. These inquires may be passed on to the Vegetation Management team to help further inform or educate customers regarding tree trimming questions and concerns. Through these processes, inquiries were generally resolved in the field.

Complaints Referred to the Commission

For the year 2019, Duke Energy had 23 informal complaints to the Commission's Consumer Affairs Division related to vegetation management and 2 leftover from 2018. Below is a brief description of the complaints and resolutions.

Complaint	Description	Resolution	Status
1	Customer compliant about vegetation management activity performed on County-owned park property. Customer had numerous complaints about large trees that were not cut & debris that was not removed.	Although the County was fine with the work performed, trim crews went back, cut the wood into firewood and stacked it. No further communication from customer.	Closed
2	Customer claimed Duke Energy Indiana cleared brush for neighbor but not for the customer. Customer upset about widening of	Contractor made multiple trips to clean up debris, stack logs, etc. But Customer still upset about the 100' easement. Litigation ongoing.	Pending

Complaint	Description	Resolution	Status
	easement for transmission line. Customer threatened contractor crew after agreeing to work; sheriff had to be called.		
3	Customer complaint that Duke Energy Indiana would not remove tree hanging over service line.	Duke Energy Indiana offered to temporarily disconnect service so customer could have their own contractor trim/remove tree.	Closed
4	Customer complaint that contractors trimmed over 75% of the tree canopy on her property, against the Commission rules. Customer also complained that Duke Energy Indiana trimmed trees on her private property.	A Duke Energy Indiana Vegetation Management specialist made multiple visits and did find trees with more than 25% of canopy removed in order to comply with ANSI cuts to gain the necessary clearing. Contractor offered to remove those trees, but customer wanted to discuss restitution. She was provided with information of Duke Claims dept, which is handling her claim.	Closed
5*	Member of General Assembly contacted Consumer Affairs Division with compliant from several customers that Duke Energy Indiana was trimming 45 feet on each side of transmission line.	Duke Energy Indiana Vegetation Management specialists met with affected customers multiple times and obtained permission for all work performed in the Transmission ROW.	Closed
6*	Customer disputed the number of trees/bushes scheduled to be removed for Transmission ROW.	Contract Forester provided copy of easement discussed vegetation management plan to customer; came to agreement, which included removal of an additional ash tree.	Closed
7*	Customer disputes the number of trees/bushes scheduled to be removed for Transmission ROW.	A Duke Energy Indiana Vegetation Management specialist scheduled meeting with	Closed

Complaint	Description	Resolution	Status
		Customer, who agreed to the work to be done.	
8*	Customer disputes the number of trees/bushes scheduled to be removed for Transmission ROW.	This customer was not contacted because their property is not affected by the current plan.	Closed
9	Customer complaint that trees were dead and about to fall on the lines.	Duke Energy Indiana sent a Hazard Tree Planner to survey the area but did not see any dead or dying trees that were a threat to Duke Energy Indiana's lines. Customer was not at home and the employee left a door hanger requesting the customer call.	Closed
10	Customer complaint that trimming in 2017 caused trees to die, which then caused power lines to lay top of his house. Customer wanted trees removed.	A Duke Energy Indiana Vegetation Management specialist set up meeting and came to an agreement with customer on which trees would be trimmed/removed.	Closed
11	Customer complaint that contractor cut down a very old tree on his property and customer wants compensation.	Contractor and customer came to agreement as to appropriate compensation.	Closed
12	Customer lost phone/cable service on 7/20; phone service said Duke Energy Indiana needed to clear lines of vegetation before they could restore phone service.	Crews went out and cleared brush and cleared lines.	Closed
13	Customer request that a tree be trimmed.	Duke Energy Indiana sent a crew to resolve concern.	Closed

Complaint	Description	Resolution	Status
14	Customer concerned about number of trees to be cut down.	A Duke Energy Indiana Vegetation Management specialist met with customer. Customer agreed to allow contractor to trim all but one apple tree not threatening the line; contractor also agreed to remove a few other trees for customer.	Closed
15	Customer said he's had multiple outages due to overgrown trees in his area.	A Duke Energy Indiana Vegetation Management specialist contacted customer the next day and informed him that work would begin in his area in the near future.	Closed
16	Customer concerned that heavy limbs being trimmed above her house will fall through her roof.	Contractor had completed all the work in her area and cleaned up all the debris to customer's satisfaction.	Closed
17	Customer had several power outages this year; also expressed concerns about debris that is left behind after trimming.	Duke Energy Indiana Vegetation Management contacted customer and performed work and cleaned away debris.	Closed
18	Property owner concerned about number of trees to be removed from ROW.	Contractor contacted customer and came to agreement so long as contractor cut wood into firewood.	Closed
19	Customer complaint about vegetation management debris left behind.	Customer's issues were addressed.	Closed
20	Customer was notified about the need to remove a Hazard Tree. In the notification, customer was asked to contact contractor about what should be done with wood. When customer did not respond, Contractor removed all wood from premises	Contractor worked with customer to resolve to his satisfaction and provide him replacement wood.	Closed

Complaint	Description	Resolution	Status
21	Customer did not want Duke Energy Indiana to remove fir trees and offered to maintain the trees herself.	A Duke Energy Indiana contract Forester spoke with customer and came to agreement about what trees and shrubs were to be removed.	Closed
22	Property owner dissatisfied with new line design in area and doesn't want any of his trees removed.	Duke Energy Indiana Vegetation Management spoke with customer about legal authority to perform vegetation management activities; work was performed in November of 2019.	Closed
23	Customer requested removal of dead tree that abuts the utility easement at rear of his yard.	A Duke Energy Indiana Vegetation Management specialist conducted visual inspection and determined that the dead tree doesn't fall within the Company's Hazard Tree guidelines. Offered to temporarily disconnect service so customer could have their own contractor trim/remove tree.	Closed
24	Customer requested trees be trimmed and Duke Energy Indiana responded that it would complete work in 4-12 weeks. Customer reached out on week 13 to get status update.	Customer emailed Duke Energy Indiana and met with a contractor the next day. Contractor completed some of the requested work and the remainder will be completed in the next trim cycle. Customer satisfied.	Closed
25	Customer contacted Consumer Affairs Division to have an immediate halt to trimming claiming we were butchering his trees on his densely wooded property.; customer also claimed that all lines to his property are underground.	Duke has had an overhead distribution line in place since 1957 along the back of his property and has a prescriptive right to trim a 10' corridor along this line. Customer refused to return calls and called police when contractor began trimming neighbor's property. Ultimately, a Duke Energy Indiana Vegetation Management specialist was able to work out an agreement with	Closed

Complaint	Description	Resolution	Status
		customer to complete needed work.	

Complaints Referred to Management

There were 7 complaints, including 2 (marked with an asterisk) carried over from 2018, that were not quickly resolved in the field and were referred to manager level for resolution. Below is a brief description of these complaints and resolutions.

Complaint	Description	Resolution	Status
1*	Duke Energy Indiana needed to remove trees from our easement and customer wanted replacement trees. Customer had issues with tree trimming in the past.	Verbal agreement to replace specific trees.	Closed
2*	Contractor damaged fence while trimming in 2018. Attempts were made by contractor to repair fence, but customer wanted financial compensation.	This has gone to Small Claims Court per contractor representative.	Closed
3	Customer lost power several times because of falling limbs. Duke Energy Indiana sent engineer to look at lines and talk to customer. Engineer told customer trees would need to be cut all the way to the ground for the length of the line but we didn't have that budgeted this year.	Duke Energy Indiana removed vegetation causing the issues.	Closed
4	Customer contacted Duke Energy Indiana to remove dead limbs hanging on power lines. Customer offered to ask neighbor if they could take down her chain link fence for better access; contractor damaged fence.	Contractor's insurance company resolving claim.	Closed
5	Customer complaint that Duke Energy Indiana marked trees to be removed that were on private property and not in the easement.	In progress.	Pending
6	Customer said he's had 10 outages in 3 months. Customer complaint that Duke Energy Indiana said they'd come trim trees, but trees had not been trimmed.	Entire section of single phase was trimmed.	Closed
7	Customer complaint that tree growing up in 3-phase primary.	Crews dispatched to trim.	Closed

Midwest Vegetation Management Program

CONTENTS

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*

NOTE: This is a comprehensive list of definitions for all areas. Some definitions may not apply to all areas.

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.

ANSI Z133: American National Standards Institute (ANSI) Z133 for Arboricultural Operations, provides the generally accepted industry safety standards for the care and management of trees, shrubs, and other woody plants.

AREA: Defined as the Duke Energy Vegetation Management Specialist area of responsibility.

ASSET PROTECTION: Duke Energy department that enforces transmission right of way legal rights.

BASE-LOCATION (OR DESIGNATED STARTING POINT): Location where Contractor production equipment is assembled as a complete work unit at a designated starting point as mutually agreed upon with Owner.

BRUSH: Volunteer/naturally growing perennial woody stem less than or equal to six (6) inches in diameter, measured at breast height (DBH).

CIRCUIT MILES (FOR REFERENCE AND REPORTING PURPOSES): The distance, in miles, of primary voltage electric lines from the substation to the end of the circuit including single-phase, two-phase or three-phase configurations. The distance is measured to the nearest 1/10th of a mile.

CIRCUIT MILES (FOR SCOPE OF WORK PURPOSES): Includes all lines miles of the circuit, such as primary, secondary and service type conductors that may or may not be shown on the circuit maps. Conductors that are represented as secondary or service wires are not considered additional miles.

CLEARANCE: The distance between conductor and vegetation.

CLOSE OVERHANG: Overhang that is within the 10 ft space above the primary conductors and extends at least 5 ft past the vertical plane formed by the primary conductor on single-phase lines and the outside primary conductors on three-phase lines.

COMPATIBLE VEGETATION FOR DISTRIBUTION: Vegetation within the distribution right of way that does not present a grow-in or fall-in threat that has a typical mature height of less than 15 feet and whose trunk is typically no closer than 10 feet from the center of the right of way.

COMPATIBLE VEGETATION FOR TRANSMISSION: Vegetation within the transmission right of way that does not present a grow-in or fall-in threat that has a typical mature height of less

than 15 feet and whose trunk is typically no closer than 20 feet from the center of the right of way.

CONDUCTOR BLOWOUT: Conductor horizontal position/location at NESC designed wind and temperature.

CONDUCTOR SAG: Conductor vertical position/location at designed maximum operating conditions.

CONTRACTOR: Corporation to whom the vegetation management work is awarded. Contractor is also referred to as Supplier.

CUSTOMER: A person, household, business or other entity that receives electric service from the Owner. Customers may or may not also be property owners.

CYCLE BUSTERS: Fast growing species found adjacent to or directly under the wire zone that can require, more frequent, costly trimming than the standard maintenance cycle.

DANGER TREE: A tree that if it were to fall or be cut would be tall enough to strike electrical lines and equipment of the transmission or distribution system.

DIAMETER BREAST HEIGHT (DBH): Tree diameter measured outside bark typically at 4.5 feet above the ground.

DISTRIBUTION SYSTEM: The Distribution system includes the poles, wires, transformers, and other equipment needed to carry electricity from substations to individual customers.

DUKE ENERGY CAROLINAS: The Duke Energy operating company in North Carolina and South Carolina known as Duke Energy Carolinas (abbreviated as DEC). Duke Energy Carolinas is sometimes referred to as Carolinas West.

DUKE ENERGY FLORIDA: The Duke Energy operating company in Florida (abbreviated as DEF).

DUKE ENERGY MID-WEST: The Duke Energy operating companies in Indiana, Ohio and Kentucky, collectively referred to as DEM.

DUKE ENERGY PROGRESS: The Duke Energy operating company in North Carolina and South Carolina known as Duke Energy Progress (abbreviated as DEP). Duke Energy Progress is sometimes referred to as Carolinas East.

EASEMENT: The actual “right” created by grant, reservation, agreement document, prescription, or necessary implication in which one has in the land of another. These rights remain with the property even if ownership of the property changes.

FLOOR: The strip of land between easement boundaries. It can also refer to the strip of land maintained using integrated vegetation management to promote low growing species of vegetation.

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

IMMINENT THREAT: An immediate threat to public safety that includes a high risk of damage to Duke Energy facilities.

INCOMPATIBLE DISTRIBUTION VEGETATION: Vegetation within the distribution right of way that will mature to a height or size that will pose a grow-in, fall-in, or blowing-together threat to the conductor, or that will limit or block access to facilities during routine or emergency maintenance activity.

INCOMPATIBLE TRANSMISSION VEGETATION: Vegetation within or outside the transmission or right of way that will mature to a height or size that will pose a grow-in, fall-in, or blowing-together threat to the conductor, or that will limit or block access to facilities during routine or emergency maintenance activity.

INTEGRATED VEGETATION MANAGEMENT (IVM): Vegetation plan that combines various components including pruning, mowing, and herbicide applications to manage the growth of vegetation on the electric distribution rights of way.

JARRAFF: Brand name of mechanical ROW trimmer used to side trim in rural, forested areas.

LEGAL: Duke Energy Legal Department.

MAINTAINED AREA: An area where cut brush typically cannot be left on-site while conducting routine maintenance. Maintained areas are considered improved areas. Examples include but are not limited to yards, landscaped areas, pastures, orchards, agricultural fields and nurseries.

MULTI-STEM TREE: A tree comprised of multiple trunks and supported by a common root system. Note: all stems of the multi-stem tree make up one tree for record keeping purposes.

MULTIPLEX CABLE: A bundle of three or four conductors most commonly used to provide aerial service to homes and businesses denoted by its 3 or 4 polyethylene coated conductors wrapped around a bare, aluminum conductor.

OPEN WIRE SECONDARY (OWS): A distribution line configuration that uses 3 or 4 un-insulated conductors stacked vertically with 12-inch spacing between conductors, used to deliver secondary voltages ranging from 120- 600 volts to the customer.

OWNER: Representative of Duke Energy. The owner should be, but is not limited to, the Vegetation Management Specialists or Contract Representative.

OVERBUILDS: a type of electric power line construction that refers to conductors and equipment that are built over primary distribution lines; most commonly, transmission voltage power lines.

PRIMARY CONDUCTOR: Electric conductor(s) energized at greater than 600 volts of electricity.

REACTIVE WORK: Emergent vegetation related work identified by internal employees in the field or by a customer, not previously documented or planned, that requires action before the next scheduled maintenance interval cycle to mitigate a potential safety or reliability issue.

REGION: is defined as Duke Energy Progress, Duke Energy Carolinas, Duke Energy Midwest, and Duke Energy Florida.

REMOTE SENSING: The use satellites, high flying aircraft, or drones to collect data to be used for vegetation management planning.

RIGHT OF WAY (ROW): A strip of land that an electric utility uses to construct, 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.

SECONDARY CONDUCTOR: Electric conductor(s) are energized at 600 volts or less of electricity.

SERVICE-TRIPLEX-MULTIPLEX LINE: Electric conductor(s) energized at 600 volts or less of electricity and terminate at a service delivery point. A bundle of three or four conductors, most commonly used to provide aerial service to homes and businesses, denoted by its 3 or 4 polyethylene coated conductors wrapped around a bare, aluminum conductor.

SHARPENED STUBS: The remaining portion of a tree left in place after being topped with a mechanical trimmer.

SINGLE PHASE PRIMARY: A type of electric power line construction that contains one (1) conductor energized at primary voltage.

SINGLE TREE PRUNE UNIT: One Single Tree Prune unit will be used per span in either of two situations: where there is only one tree within a span that requires pruning and is typically 45 minutes or less to complete the work or Spans shorter than 50' that require trimming.

SPAN: A unit of primary conductor line between two poles.

STRUCTURALLY UNSOUND LIMB: A limb/branch this is structurally unsound whose weakness pose a threat to the reliability/integrity of the distribution system and a probable threat within the next maintenance/trim cycle.

THREE PHASE PRIMARY: A type of electric power line construction that contains three (3) conductors energized at primary voltage.

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

TRANSMISSION SYSTEM: The Transmission system includes the towers, poles, wires, and other
equipment needed to carry electricity from generation facilities to substations.

TREE: A perennial woody stem six (6) inches in diameter or larger measured at breast height DBH.

TWO PHASE OR OPEN WYE: A type of electric power line construction that contains two (2) conductors energized at primary voltage.

UNIT-MILE**:** A mile within a circuit that is required to be or has been trimmed per Contract specifications.

UNMAINTAINED AREA: Any area where cut brush can be left on-site while conducting routine maintenance Non-maintained areas are considered unimproved areas. Examples include but are not limited to rural areas, wood lots and natural areas.

WIRE ZONE: The area over and under the conductors.

WORK PLAN- ANNUAL WORK PLAN: Work which is identified to be performed during a particular year.
Yard Trees-: Trees in landscaped or maintained areas.

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

PRIMARY CONDUCTORS

- Minimum of 10 feet clearance to the side from all conductors or to the previously established width
- Underneath the primary: For conventional and bucket work, under the primary clearances will be a minimum of 10 ft. from the lowest primary conductor or 5 ft. below all neutrals, open wire and wrapped secondary. For conventional and bucket work, if vegetation is not encroaching the line and will hold until the next cycle, then the tree will be bypassed. Where mechanical tree trimmers are used – ROW will be mowed to the whole width of the ROW.
- Overhang: When not limited by government regulations, minimum accepted height clearance above the conductor will be fifteen (15) feet above the conductors. Established limbs 4" or greater to remain within the 15 feet. The 4" will be measured where the overhang crosses the conductor. Except 34.5, 69KV, and 138KV which will be trimmed to 2.3 Transmission standards. The only exception is that in some areas, there may be large mature overhang that the Owner has allowed to remain for various reasons. If the Owner specifies that overhang greater than 4" must be removed, obtaining the permission to remove the overhang shall be the responsibility of the Owner. Payment for such removal shall be made using T&E rates. In any case where overhang is allowed to remain all hazardous overhang (dead, dying, diseased, structurally unsound) shall be removed ground to sky

SECONDARY CONDUCTORS

- Secondary, including open wire secondary distribution conductors (without a primary distribution line and excluding a service drop), shall be trimmed on an as needed basis by reactive crews. Any scheduled reactive work shall require a minimum of 5 ft. of clearance around them.5 feet clearance above and below open wire secondaries.
- Multiplex cables and guy wires (without a primary distribution line and excluding a service drop), shall be trimmed on an as needed basis by reactive crews. Any scheduled reactive work shall require the removal of load bearing limbs that are in contact with conductors and have a size and weight that causes tension on the conductor or interference with the normal sag or alignment of the conductor. When pruned, 12 inches of clearance shall be obtained.

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.