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 2020 VEGETATION MANAGEMENT REPORT AND VEGETATION MANAGEMENT PLAN

Respondent Duke Energy Indiana, LLC hereby submits its 2020 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 29th day of March 2021, to the following:

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Duke Energy Indiana

Annual Vegetation Management Report for Calendar Year 2020

Cause No. 43663

2020 Vegetation Management – Financial Report (Budget vs. Actual)

2020 Original Budget: $ 90,221,046. This amount is comprised of $69,696,396 for Distribution Vegetation Management and $20,524,650 for Transmission Vegetation Management

2020 Actual Expenditures: $ 85,006,414. For 2020, Duke Energy Indiana spent $60,466,498 for Distribution Vegetation Management activities and $24,539,916 for Transmission Vegetation Management Activities.

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".

2020 Vegetation Management Reliability Report (Tree SAIFI):

Total Tree System Average Interruption Frequency "SAIFI": 0.201

Total Indiana SAIFI from all causes for 2020 is 0.952. Tree SAIFI was approximately 21% 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*".

2020 Vegetation Management Customer Complaints Report

With regard to customer complaints, Duke Energy Indiana 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 49 customer complaints related to tree trimming/vegetation management and 1 was carried over from 2019; 46 were informal complaints to the Indiana Utility Regulatory Commission's ("Commission") Consumer Affairs Division ("CAD") that have been reviewed and closed. There were 3 complaints referred to management, including 1carry over from 2019, which were reviewed as noted with 2 of those closed and 1 remaining pending.

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 2020, Duke Energy Indiana had 46 informal complaints to the Commission's CAD related to vegetation management and none leftover from 2019. Below is a brief description of the complaints and resolutions.

Complaint	Description	Resolution	Status
1	Request for street-light repair and for vegetation management.	Referred streetlight repair to correct department and sent vegetation concerns to vegetation management.	CLOSED
2	Customer complaint regarding a tree that was endangering the lines on his property.	Communicated with customer that the lines he called about were phone/cable lines. Customer to contact those companies about his concern.	CLOSED
3	Customer complaint about tree trimming request being delayed.	Vegetation management will work with the customer to resolve his concerns about the trees.	CLOSED

Complaint	Description	Resolution	Status
4	Customer complaint about trees on her property that were to be removed per the Transmission easement.	Copy of easement provided to customer and Vegetation Management Specialist met with customer before work began. Customer signed a document that she agreed for the work that was to be done.	CLOSED
5	Customer complaint about the aesthetics plan related to substations.	Vegetation Management Specialist along with our Gov't and Community Affairs Manager and Project Manager spoke with Customer. Duke Energy Indiana also hosted an external meeting for the public to share the landscape plan.	CLOSED
6	Customer complaint that trees were removed that provided privacy between customer's property and the power plant behind them. Customer alleged that it had not been made aware that the power plant was expanding before the trimmers removed the trees.	Vegetation Management Specialist contacted customer directly to address questions and concerns. Postcards were sent out in mail on 2/07/2020 to all customers within 500 feet of the substation.	CLOSED
7	Customer complaint about trees in customer's backyard that needed trimming including one tree touching the power line.	Request sent to Customer Service to obtain information before processing tree trimming request. The circuit that serves this customer is on schedule to be maintained.	CLOSED
8	Customer compliant that pine trees along road and property line where they had been topped are now dead, trees need to be cut down.	Customer was contacted by Contractor to explain we will make trees safe for customer removal.	CLOSED
9	Customer called to say trees were growing up through the lines in her neighborhood. She was told Company representatives would be out to look at the situation. She said	Vegetation Management Specialist left message for the customer that crews would be out the next week to trim the trees.	CLOSED

Complaint	Description	Resolution	Status
	even though the representatives had been out to review that the situation had not changed.		
10	Customer concerned about trees within the easement in her yard scheduled for removal and stated she was told in 2016 that the trees would not need to be cut.	The customer was contacted by a Transmission Vegetation Management Specialist who explained that the trees in questions interfered, or had the potential to interfere, with the transmission lines; Company allowed the customer to replant trees outside the easement.	CLOSED
11	Customer submitted a Refusal Form in 2017 and Duke Energy Indiana did not trim on her property. The next time the Company wanted to trim on her property she referred to the 2017 Refusal.	Duke Energy Indiana representative met with customer on 3/04/2020. She showed the 2017 Refusal and representative explained that if her trees were a liability and an emergency that the regulations gave Duke Energy Indiana the authority to trim the trees. CAD agreed to allow trimming and trees were trimmed on 3/09/2020.	CLOSED
12	Customer says she hasn't seen the trimmers out there and it doesn't look like any work has been done.	Customer was shown that the vine in question was trimmed/removed per her request. She was satisfied.	CLOSED
13	Customer said contractor removed 1 of 2 trees growing into the power line in his backyard but was called away after removing the 1st tree. Customer has not been able to contact the Contractor about the 2nd tree.	Contractor contacted customer and left his phone number to arrange to remove the 2nd tree when the ground dried out enough to get a truck in his backyard.	CLOSED
14	Customer said tree marked to be removed has been in the same spot for more than 19 years and questions why now it needs to be removed. Questions all the	Duke Energy Indiana representative met with representative of the HOA to go over work scope on/near this customer's property and provided documentation to better inform members of the community. They	CLOSED

Complaint	Description	Resolution	Status
	removals marked in his subdivision.	explained that all trees to be removed are within the easement and it is in accordance with 2020 work plan to stay within compliance with service reliability.	
15	Customer requesting information about her rights concerning tree trimming. She says Duke Energy Indiana came on her property without notice and cut 15-20 ft off the top of some of the trees. Customer claimed that Duke Energy Indiana was also to return and do more cuts and clean up debris.	Duke Energy Indiana personnel met with customer and provided additional information and ground the stumps where customer requested. Personnel also worked with customer to replant some trees outside of the easement and continued to work with the customer until all work was completed.	CLOSED
16	Customer alleged that she didn't receive notice that tree trimming was to occur on her property, but neighbor noticed trimmers in the area. That neighbor contacted employee of trimmers and left voice mail asking confirmation of type of trimming to be done. Customer and neighbor did not receive further contact. Customer did receive notice that a pole was to be replaced but old pole still there.	Vegetation Management Specialist was onsite and met with customer to explain that the tree at issue was part of a circuit conditioning and was not routine trimming. Furthermore, the tree was in a road right-of-way and not on the customer's property. Specialist explained that a door tag was left on 2/06/2020 notifying of upcoming trimming. Pole was removed on 4/23/2020.	CLOSED
17	Customer dissatisfied with planned transmission line rebuild project and associated vegetation maintenance work scheduled for their area.	Vegetation Management Specialist contacted customer to explain the scope of the project. The customer understood and accepted the need for trimming.	CLOSED
18	Customer complaint that a tree in her backyard is disrupting service.	Contractor went to property and found a few limbs on the service drop. He had a crew take care of it on 4/14/2020.	CLOSED

Complaint	Description	Resolution	Status
19	Customer complaint about a limb hovering within 2 feet of the wire connected to his house.	Vegetation Management Specialist went to property and informed customer that he will need service line drop and a private tree company to trim/remove limb. As of 3/24/2020 job is complete.	CLOSED
20	Customer complaint that tree trimmer crew member walked down his trail into his woods to relieve himself.	Contractor called customer to apologize and committed to address with the employee	CLOSED
21	Customer complaint that contractor drove heavy equipment over the edge of his asphalt and broke it/smashed it down.	Contractor Management resolved to customer's satisfaction.	CLOSED
22	Customer alleged neighbor was contacted about tree trimming to happen, but customer wasn't. Also concerned that the contractor left wood that was 3'-4' in diameter, unstacked and not moveable by an individual. Contractor says they left the wood in an acceptable condition per regulations.	On June 3rd Vegetation Management Specialist met with customer on site and said the logs were cut within our standards, but customer disagreed. Contractor agreed to resolve by removing the wood and perform a comprehensive clean up. Also, they will add soil to fill in the divots in his lawn.	CLOSED
23	Customer complaint about the condition of his backyard after contractor trimmed. Wants someone to contact him to discuss.	Contractor to mitigate with customer. As of 6/15/2020 work was completed.	CLOSED
24	Customer says brush was trimmed on the easement on his property, but a mess was left.	Contractor cleaned up the brush and debris, even though they had not performed any work on this property.	CLOSED
25	Crew was supposed to remove vines and limbs from the supply line weather head next to his	Vegetation crew took care of it on 6/16/2020.	CLOSED

Complaint	Description	Resolution	Status
	house, but they haven't shown up.		
26	Customer complaint that he requested a tree branch removal 2 months ago and called back 3 times with no response.	Customer notified and crew completed the work.	CLOSED
27	Customer made request online for tree trimming in his yard and neighborhood.	Contractor could not locate the work order that customer quoted, and no service address was given. Work was completed 7/14/2020.	CLOSED
28	Customer called to report large limb laying on the power line.	Vegetation crew removed limb.	CLOSED
29	Customer concern about trees growing through the lines.	Vegetation crew dispatched and verified the tree is not interfering or pushing on the power line. Advised customer will need to hire a private tree contractor to trim the limb.	CLOSED
30	Customer reported a tree hanging on the power line in front of his house.	It was determined the limb is not on power lines, it is on the phone lines. Customer advised to contact the phone company.	CLOSED
31	Customer requested removal of two dead trees in his yard and is dissatisfied with the amount of time for contractors to contact him and complete the work.	The customer complaint was relayed to a Vegetation Management Specialist who visited with the customer and resolved the issue.	CLOSED
32	Customer complaint that Duke Energy Indiana refused to do tree trimming when line hanging 1 foot lower than required.	It was determined the limb is not on power lines, it is on cable lines. Customer advised to contact the cable company.	CLOSED
33	Customer concern that branch of backyard tree is hanging over the power line.	Vegetation crew went out on 8/13/2020 and removed the small limb.	CLOSED

Complaint	Description	Resolution	Status
34	Customer dispute regarding agreed upon reimbursement amount for the removal of trees from his yard.	The Transmission Vegetation Management Specialist made multiple attempts to fulfill the reimbursement agreement, but the customer continued to dispute the agreed upon amount per tree. CAD reviewed the complaint and advised the customer to accept the reimbursement agreement, as proposed.	CLOSED
35	Customer complaint that crew topped her spruce trees that were nowhere near the power lines.	Contractor made contact and took responsibility for misunderstanding; removed tree as customer requested. Contractor has resolved situation with the customer.	CLOSED
36	Customer complaint about power outage due to vegetation management activity on the transmission line behind customer's property and associated loss of refrigerated items. Customer states they should have been informed prior to the outage.	The Transmission Vegetation Management Specialist made contact and explained that Duke Energy Indiana attempted to inform the customer of the planned outage but had invalid contact information on file. The contact information was updated, and the customer was informed on how to dispute the reimbursement claim for items lost due to the outage.	CLOSED
37	Customer complaint about a tree that needs to be trimmed around transformer and service line to his house.	Vegetation Management Specialist called customer who informed us that it's his neighbor's tree. Vegetation Management Specialist gave him a phone number for neighbor to call.	CLOSED
38	Customer upset about trimmed trees on her property. Customer alleges that she was not notified and that crew did not identify themselves.	Crew says they knocked and left door hanger on 10/06/2020. On 10/07/2020 removed 2 dead Ash trees on customer's property. On 10/20/2020 sent Work Planner back out to customer's house to discuss complaint. He knocked, didn't receive a response and left another door hanger. Vegetation Management Specialist also called customer on 10/20/2020 and then went to the property. He tried to	CLOSED

Complaint	Description	Resolution	Status
		call again at 3.37 pm when he was in her driveway. He also knocked on door and rang doorbell with no reply. He reviewed trees removed and went back and left doorhanger with his contact info. Each time someone called the phone rang 20 - 30 times without an option to leave a message.	
39	Customer's neighbor had a tree that was trimmed and debris was left on customer's property.	Crew left the brush when it was raining and forgot about it. Crew was sent within the hour and was cleaned up.	CLOSED
40	Customer says can't get a response about a problem they inspected on Aug 4th.	Agreement made with customer tree would be removed once signed permission form received.	CLOSED
41	Customer's reiterated prior request to remove dead limbs from neighbor's property hanging over his lines. One limb fell and broke the cable line. Customer would like Company to come out and re-evaluate removing the tree.	Crew sent out to look at the tree, which has been evaluated before. The problem is getting equipment into the tree which sits on a bank with stone walls along the sidewalk, so no access. There is a yard without the stone wall, but the bank is too steep. The tree is much too dead for a climber to take it down. There is no safe way to remove this tree since they can't get the equipment needed near the tree.	CLOSED
42	Customer requested tree trimming for tree that is touching the distribution line and poles in March 2020. She has called multiple times since to ask status.	A Work Planner went to evaluate the site and said there is a problem with accessing the tree with equipment. The tree is too dead to use a climber, and no safe way to drop the tree. The tree poses no imminent threat to Duke Energy Indiana equipment.	CLOSED
43	Meter displaying error code and needs vegetation cleared from the meter base to trouble shoot or replace meter.	Work scheduled for Nov 18th.	CLOSED

Complaint	Description	Resolution	Status
44	Customer has called many times about a large limb that fell off tree along east side fence in his backyard.	Vegetation crews were contacted, and the work completed.	CLOSED
45	Customer alleged that during the summer, Duke Energy Indiana marked a tree within 8 feet of his house to be removed.	Vegetation Management Specialist investigated and believes it was a non-Duke Energy Indiana contractor that was in contact with customer.	CLOSED
46	Customer has called twice about tree trimming without a response, very disappointed.	Message left for customer to call and will discuss his concerns.	CLOSED

Complaints Referred to Management

There were 3 complaints, including 1 (marked with an asterisk) carried over from 2019, 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	Customer complaint that almost all of the trees on his property were removed, and that they were not in the easement as Duke Energy Indiana representative stated.	Transmission Vegetation Management Specialist met with customer and agreed to allow 1 apple tree at the outside of the edge of border zone. Specialist also offered to replant trees outside of easement for the other trees removed. Customer wanted instead a danger tree next to their house to be removed at a later time. This was agreed to and the matter is closed as of Sept 2019.	CLOSED
2	Customer doesn't want trees trimmed, says trimming is too aggressive. Customer states that the property was designed and built to emphasize the views into the ravine and its thick woods. Through 12+ years living in this house no trees have caused any disruption of power. The lines to his house are buried.	Customer was contacted to explain the need for trimming and that Duke Energy Indiana has a prescriptive easement to trim the trees on his property. The trees were trimmed with the Vegetation Management Specialist onsite and customer was happy with how the trees were trimmed.	CLOSED
3	Customer stated that conifer trees grown on her property along the edge of the line were being grown as Christmas trees and therefore didn't want us trimming.	After meeting with the customer and informing her of what we wanted to do she allowed us to trim her trees.	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.