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**VIA OVERNIGHT DELIVERY**

RECEIVED

April 28, 2017

MAY 01 2017

Dr. Talina R. Mathews  
Kentucky Public Service Commission  
211 Sower Boulevard  
Frankfort, Kentucky 40602

PUBLIC SERVICE  
COMMISSION

**Re: 2016 Reliability Report and Vegetation Management Plan Update**

Dear Dr. Mathews:

Enclosed please find a signed paper and one electronic copy of the Duke Energy Kentucky, Inc. 2016 Reliability Report and Vegetation Management Plan Update.

We have included the unredacted part of Exhibit A in a separate envelope to be filed under seal. Also enclosed is a Petition for Confidential Treatment for your consideration in the above referenced matter.

Please date-stamp the two copies of the letter and the filings and return to me in the enclosed envelope.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

E. Minna Rolfes-Adkins  
Sr. Paralegal

ERA  
Enclosures



3. The Commission's regulations, in 807 KAR 5:001, Section 13, provide that any person requesting confidential treatment of any material file a petition setting forth the grounds, pursuant to KRS 61.870 *et seq.*, upon which the Commission should classify that material as confidential.

4. Kentucky Revised Statute § 61.878(1)(c)(1) provides that records confidentially disclosed to an agency or required to be disclosed to the agency be exempt from Kentucky's open records statutes, KRS 61.870 *et seq.* where the records are generally recognized as confidential or proprietary, and which if openly disclosed would permit an unfair commercial advantage to competitors of the entity that disclosed the records.

5. Duke Energy Kentucky submits that the following information, if openly disclosed, could present security issues:

- a. Physical street addresses of all the Company's electric substations and circuits.

6. The above information, if openly disclosed, would allow the public knowledge as to the specific physical location of critical utility infrastructure, namely Duke Energy Kentucky substations and circuits. With this information, a possible security issue could arise. Such actions might include theft, destruction, possible injury, and/or vandalism. Releasing the street address of all of the Company's electric substations in one public filing would present a significant security and reliability risk where a concentrated action could undermine Duke Energy Kentucky's distribution system and the security of its grid.

7. The information for which Duke Energy Kentucky is seeking confidential treatment is not known outside of Duke Energy Corporation.

8. Duke Energy Kentucky does not object to limited disclosure of the confidential information described herein, pursuant to an acceptable protective agreement, to the Attorney General or other intervenors with a legitimate interest in reviewing the same for the purpose of participating in this case.

9. Pursuant to 807 KAR 5:001 Section 13(2), Duke Energy Kentucky has attached to this Petition, under seal, one copy of Exhibit A of the 2016 Reliability Report and Vegetation Management Plan and one copy of Exhibit A of the 2016 Reliability Report and Vegetation Management Plan with the confidential material omitted or otherwise redacted. Duke Energy Kentucky respectfully requests that the Confidential Information be withheld from public disclosure indefinitely. This will assure that the Confidential Information will not become available to the general public. To the extent the Confidential information becomes generally available to the public, whether through filings required by other agencies or otherwise, Duke Energy Kentucky will notify the Commission and have its confidential status removed, pursuant to 807 KAR 5:001 Section 13(10)(a).

10. This information was, and remains, integral to Duke Energy Kentucky's effective execution of business decisions. And such information is generally regarded as confidential or proprietary. Indeed, as the Kentucky Supreme Court has found, "information concerning the inner workings of a corporation is 'generally accepted as confidential or proprietary.'" *Hoy v. Kentucky Industrial Revitalization Authority, Ky.*, 904 S.W.2d 766, 768 (Ky. 1995).

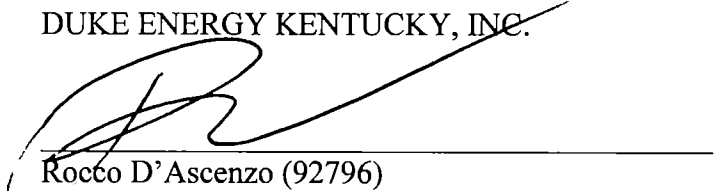
WHEREFORE, Duke Energy Kentucky respectfully request that the Commission:

1. Accept this Petition for filing;

2. Grant the information delineated herein confidential treatment in accordance with 807 KAR 5:001 Section 13 and KRS 61.870 *et seq.*

Respectfully submitted,

DUKE ENERGY KENTUCKY, INC.



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**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing filing was served on the following via overnight mail, this 28 day of April, 2017:

Rebecca Goodman  
The Office of the Attorney General  
Utility Intervention and Rate Division  
700 Capital Avenue, Suite 20  
Frankfort, Kentucky, 40601



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Rocco D'Ascenzo

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

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DUKE ENERGY KENTUCKY, INC.  
RELIABILITY REPORT AND VEGETATION MANAGEMENT PLAN UPDATE FOR  
CALENDAR YEAR 2016

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April 28, 2017

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## **I. Introduction**

On May 30, 2013, the Commission issued its Order requiring all jurisdictional utilities to file annual reliability reports and to develop vegetation management plans. Pursuant to the Order, jurisdictional utilities were required to report a 5 year average of reliability data. The reports are required to be based upon a calendar year (January to December) and filed by the first business day in May in the year immediately following the reporting year.

Duke Energy Kentucky, Inc. (Duke Energy Kentucky or the Company) submits its Reliability Report and Vegetation Management Plan update for Calendar year 2016 as required by the Commission's May 30, 2013 Order in Case No. 2011-00450.<sup>1</sup>

## **II. Reliability Report Summary**

Consistent with the most recent edition of the standard number 1366 "Guide for Electric Power Distribution Reliability Indices," and the Commission's Order,<sup>2</sup> the following is included in Exhibit A of Duke Energy Kentucky's Reliability Report Summary:

1. Calculate the System Average Interruption Duration Index (SAIDI) system-wide indices including Major Event Days (MEDs) and calculate the SAIDI system-wide indices excluding MEDs;
2. Calculate the System Average Interruption Frequency Index (SAIFI) system-wide indices including MEDs and calculate the SAIFI system-wide indices excluding MEDs;
3. Develop a system-wide rolling five-year average SAIDI excluding MEDs;
4. Develop a system-wide rolling five-year average SAIFI excluding MEDs;
5. Calculate SAIDI excluding MEDs for every circuit within its system;
6. Develop a rolling five-year average SAIDI for each circuit within its system;

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<sup>1</sup> *In the matter of An Investigation of the Reliability Measures of Kentucky's Jurisdictional Electric Distribution Utilities, Case No 2011-00450. (Order)(May 30, 2013).*

<sup>2</sup> *Id.*

7. Compare each circuit to that circuit's rolling five-year average SAIDI;
8. Calculate SAIFI excluding MEDs for every circuit within its system;
9. Develop a rolling five-year average SAIFI for each circuit within its system;
10. Compare each circuit to that circuit's rolling five-year average SAIFI.
11. File a Reliability Report by May 1 of each year, containing the reliability information as outlined in the attached Appendix for the preceding calendar year from January 1 to December 31 that includes the SAIDI and SAIFI system-wide indices, both including and excluding MEDs.

12. For each circuit with either SAIDI or SAIFI value higher than that circuit's respective SAIDI or SAIFI rolling five-year average, excluding MEDs, include in the annual Reliability Report the following information:

- a. The circuit's SAIDI index for the year;
- b. The circuit's SAIFI index for the year;
- c. The circuit's rolling five-year average SAIDI;
- d. The circuit's rolling five-year average SAIFI;
- e. The substation name, number and location (i.e., County-Road-Town);
- f. The circuit name, number and location (Town-Road-General Area);
- g. The circuit's overall length in miles to the nearest tenth of a mile;
- h. The number of customers served on the circuit for the year;
- i. The date of the last circuit trim performed by the utility as part of its vegetation management plan;
- j. A list of outage causes for the circuit, along with the percentage of total outage numbers represented by each cause;

- k. Circuit five-year average SAIDI;
- l. Reporting year SAIDI;
- m. Circuit five-year average SAIFI;
- n. Reporting year SAIFI;
- o. A Corrective Action Plan which describes any measures the utility has completed or plans to complete to improve the circuit's performance; and
- p. Any other information the utility believes will assist the Commission in understanding the circumstances surrounding the circuit's performance.

### **III. Vegetation Management Plan Update and Summary**

Duke Energy Kentucky filed its initial Vegetation Management Plan with this Commission on December 18, 2007 in Case No. 2006-00494.<sup>3</sup> Duke Energy's Midwest Vegetation Management Group is responsible for controlling vegetation growth for 37,000 miles of transmission and distribution overhead electric lines and gas supply lines in Ohio, Indiana and Kentucky.

Exhibit B is a copy of Duke Energy Kentucky's Vegetation Management Plan. There have been no substantive amendments or changes to the Company's plan since it was initially filed with the Commission on December 18, 2007. Exhibit B, attached hereto does contain two minor clerical corrections from what was previously submitted to the Commission as part of the Company's annual filings.

As part of its 2017 plan, Duke Energy Kentucky plans to trim trees and maintain vegetation along 364 miles of its distribution system. The Company's tree trimming vendor's contract expired in 2016. During the fourth quarter of 2016, Duke Energy Kentucky began negotiations with this supplier for a temporary contract to commence with the 2017 vegetation

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<sup>3</sup> *Id.*

management cycle. In late 2016, and prior to the execution of a new contract, this supplier informed the Company that they were not able to retain sufficient resources to perform routine vegetation maintenance work in Kentucky. This resulted in not having a secured supplier to perform routine vegetation maintenance in 2017. This supplier did agree to provide limited resources to perform reactive vegetation maintenance work until the Company is able to secure a new supplier. As a result, Duke Energy Kentucky has reached out to other qualified suppliers to meet our 2017 vegetation management plan. The work has been offered to a qualified supplier and it is anticipated that regular maintenance trimming will begin as soon as possible. The Company will monitor the plan and make adjustments as needed to complete all planned trimming for 2017. The Company anticipates we will have sufficient crew coverage throughout the rest of the year.

Respectfully submitted,



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Rocco O. D'Ascenzo (92796)  
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Amy B. Spiller (85309)  
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**KENTUCKY PUBLIC SERVICE COMMISSION**

**Electric Distribution Utility Annual Reliability Report**

**SECTION 1 : CONTACT INFORMATION**

UTILITY NAME	DUKE ENERGY KENTUCKY
REPORT PREPARED BY	ILONA KORB
E-MAIL ADDRESS OF PREPARER	ILONA.KORB@DUKE-ENERGY.COM
PHONE NUMBER OF PREPARER	513-287-3121

**SECTION 2: REPORTING YEAR**

CALENDAR YEAR OF REPORT	2016
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**SECTION 3: MAJOR EVENT DAYS (MED)**

TMED	4.8671
FIRST DATE USED TO DETERMINE TMED	January 1, 2011
LAST DATE USED TO DETERMINE TMED	December 31, 2015
NUMBER OF MED IN REPORT YEAR	7

NOTE: Per IEEE 1366 TMED should be calculated using the daily SAIDI values for the five prior years. If five years of data are not available, then utilities should use what is available until five years are accumulated

**SECTION 4: SYSTEM RELIABILITY INFORMATION AND RESULTS**

**System-wide Information**

TOTAL CUSTOMERS	140,361	TOTAL CIRCUITS	134
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**Excluding MED**

5 YEAR AVERAGE		REPORTING YEAR	
SAIDI	112.59	SAIDI	101.67
SAIFI	1.14	SAIFI	0.77

**Including MED**

5 YEAR AVERAGE		REPORTING YEAR	
SAIDI	178.19	SAIDI	180.98
SAIFI	1.35	SAIFI	1.04

**Notes**

- 1) All duration indices (SAIDI) are to be reported in units of minutes.
- 2) Reports are due on the first business day of April of each year
- 3) Reports cover the calendar year ending in the December before the reports are due.
- 4) IEEE 1366 (latest version) is used to define SAIDI, SAIFI, and TMED

CONFIDENTIAL PROPRIETARY TRADE SECRET

CIRCUIT NUMBER	SUBSTATION NAME	SUBSTATION NUMBER	SUBSTATION COUNTY	SUBSTATION TOWN	CIRCUIT NAME	CIRCUIT ID	CIRCUIT NUMBER	CIRCUIT TOWN
H9321700041	ATLAS	170	KENTON	ERLANGER	ATLAS 41	H9321700041	41	CRESCENT SPRIN
H9320780042	AUGUSTINE	78	KENTON	COVINGTON	AUGUSTINE 42	H9320780042	42	COVINGTON
H9320780046	AUGUSTINE	78	KENTON	COVINGTON	AUGUSTINE 46	H9320780046	46	PARK HILLS
H9320860042	BEAVER	86	BOONE	WALTON	BEAVER 42	H9320860042	42	WALTON
H9321310043	BELLEVUE	131	CAMPBELL	NEWPORT	BELLEVUE 43	H9321310043	43	BELLEVUE
H9320670046	BUFFINGTON	87	KENTON	FLORENCE	BUFFINGTON 46	H9320670046	46	FLORENCE
H9321470041	CLARYVILLE	147	CAMPBELL	CLARYVILLE	CLARYVILLE 41	H9321470041	41	GRANT'S LICK
H9321470042	CLARYVILLE	147	CAMPBELL	CLARYVILLE	CLARYVILLE 42	H9321470042	42	GRANT'S LICK
H9321470043	CLARYVILLE	147	CAMPBELL	CLARYVILLE	CLARYVILLE 43	H9321470043	43	CLARYVILLE
H9321320041	COLD SPRING	132	CAMPBELL	COLD SPRINGS	COLD SPRING 41	H9321320041	41	COLD SPRINGS
H9322170042	COVINGTON	217	KENTON	COVINGTON	COVINGTON 42	H9322170042	42	COVINGTON
H9322170043	COVINGTON	217	KENTON	COVINGTON	COVINGTON 43	H9322170043	43	COVINGTON
H9320700041	CRESCENT	70	KENTON	FT. MITCHELL	CRESCENT 41	H9320700041	41	CRESCENT SPRIN
H9320700043	CRESCENT	70	KENTON	FT. MITCHELL	CRESCENT 43	H9320700043	43	FT. MITCHELL
H9321240041	CRITTENDEN	124	GRANT	CRITTENDEN	CRITTENDEN 41	H9321240041	41	CRITTENDEN
H9320760042	DAYTON	76	CAMPBELL	DAYTON	DAYTON 42	H9320760042	42	DAYTON
H9320890041	DIXIE	89	BOONE	FLORENCE	DIXIE 41	H9320890041	41	FLORENCE
H9320890042	DIXIE	89	BOONE	FLORENCE	DIXIE 42	H9320890042	42	FLORENCE
H9320550041	DONALDSON	55	KENTON	ERLANGER	DONALDSON 41	H9320550041	41	ERLANGER
H9320550043	DONALDSON	55	KENTON	ERLANGER	DONALDSON 43	H9320550043	43	ERLANGER
H9320550044	DONALDSON	55	KENTON	ERLANGER	DONALDSON 44	H9320550044	44	ERLANGER
H9322890042	EMPIRE	289	BOONE	FLORENCE	EMPIRE 42	H9322890042	42	FLORENCE
H9322410045	FLORENCE	241	BOONE	FLORENCE	FLORENCE 45	H9322410045	45	FLORENCE
H9322410047	FLORENCE	241	BOONE	FLORENCE	FLORENCE 47	H9322410047	47	FLORENCE
H9321610041	GRANT	161	GRANT	WILLIAMSTOWN	GRANT 41	H9321610041	41	DRY RIDGE
H9321280042	HANDS	128	KENTON	COVINGTON	HANDS 42	H9321280042	42	TAYLOR MILL
H9321520043	HEBRON	152	BOONE	HEBRON	HEBRON 43	H9321520043	43	HEBRON
H9320090041	KENTON	9	KENTON	LAKEVIEW	KENTON 41	H9320090041	41	FT. WRIGHT
H9320090042	KENTON	9	KENTON	LAKEVIEW	KENTON 42	H9320090042	42	TAYLOR MILL
H9320090044	KENTON	9	KENTON	LAKEVIEW	KENTON 44	H9320090044	44	FT. WRIGHT
H9322870043	KY UNIV	287	CAMPBELL	NEWPORT	KY UNIV 43	H9322870043	43	HIGHLAND HEIGHT
H9320980042	LONGBRANCH	98	BOONE	FLORENCE	LONGBRANCH 42	H9320980042	42	US 42
H9322100041	OAKBROOK STA	210	BOONE	FLORENCE	OAKBROOK 41	H9322100041	41	ALEXANDRIA
H9322100042	OAKBROOK STA	210	BOONE	FLORENCE	OAKBROOK 42	H9322100042	42	FLORENCE
H9321990043	RICHWOOD	199	BOONE	RICHWOOD	RICHWOOD 43	H9321990043	43	RICHWOOD
H9320620041	SILVER GROVE	62	CAMPBELL	MELBOURNE	SILVER GROVE 41	H9320620041	41	Camp Springs
H9320620042	SILVER GROVE	62	CAMPBELL	MELBOURNE	SILVER GROVE 42	H9320620042	42	Silver Grove
H9320620043	SILVER GROVE	62	CAMPBELL	MELBOURNE	SILVER GROVE 43	H9320620043	43	Melbourne
H9321250041	VERONA	125	KENTON	CRITTENDEN	VERONA 41	H9321250041	41	Dixie Hwy
H9322430041	VILLA	243	KENTON	EDGEWOOD	VILLA 41	H9322430041	41	CRESTVIEW HILLS
H9322430042	VILLA	243	KENTON	EDGEWOOD	VILLA 42	H9322430042	42	CRESTVIEW HILLS
H9322430043	VILLA	243	KENTON	EDGEWOOD	VILLA 43	H9322430043	43	EDGEWOOD
H40C0150041	WEST END STA	15	HAMILTON	CINCINNATI	WEST END 41	H40C0150041	41	PARK HILLS
H9323040041	WHITE TOWER	304	KENTON	INDEPENDENCE	WHITE TOWER 41	H9323040041	41	INDEPENDENCE
H9320590043	WILDER	59	KENTON	WILDER	WILDER 43	H9320590043	43	COVINGTON
H9320770041	YORK	77	CAMPBELL	NEWPORT	YORK 41	H9320770041	41	Newport
H9320770043	YORK	77	CAMPBELL	NEWPORT	YORK 43	H9320770043	43	NEWPORT
H9320860041	BEAVER	86	BOONE	WALTON	BEAVER 41	H9320860041	41	WALTON
H9320670042	BUFFINGTON	87	KENTON	FLORENCE	BUFFINGTON 42	H9320670042	42	FLORENCE
H9320420043	CONSTANCE	42	BOONE	ERLANGER	CONSTANCE 43	H9320420043	43	ERLANGER
H9320700042	CRESCENT	70	KENTON	FT. MITCHELL	CRESCENT 42	H9320700042	42	FT. MITCHELL
H9320700045	CRESCENT	70	KENTON	FT. MITCHELL	CRESCENT 45	H9320700045	45	FT. MITCHELL
H9320890044	DIXIE	89	BOONE	FLORENCE	DIXIE 44	H9320890044	44	FLORENCE
H9321610043	GRANT	161	GRANT	WILLIAMSTOWN	GRANT 43	H9321610043	43	WILLIAMSTOWN
H9321280044	HANDS	128	KENTON	COVINGTON	HANDS 44	H9321280044	44	ERLANGER
H9320090043	KENTON	9	KENTON	LAKEVIEW	KENTON 43	H9320090043	43	COVINGTON
H9320980041	LONGBRANCH	98	BOONE	FLORENCE	LONGBRANCH 41	H9320980041	41	FLORENCE
H9320980043	LONGBRANCH	98	BOONE	FLORENCE	LONGBRANCH 43	H9320980043	43	UNION
H9323050043	MT ZION	305	BOONE	FLORENCE	MT ZION 43	H9323050043	43	FLORENCE
H9321990041	RICHWOOD	199	BOONE	RICHWOOD	RICHWOOD 41	H9321990041	41	RICHWOOD

CONFIDENTIAL PROPRIETARY TRADE SECRET

CIRCUIT GENERAL AREA	TOTAL CIRCUIT LENGTH (miles)	CUSTOMER COUNT FOR THIS CIRCUIT	DATE OF LAST CIRCUIT TRIM (VEGETATION MANAGEMENT)	CIRCUIT 5-YEAR AVERAGE (SAIDI)	REPORTING YEAR (2016) SAIDI	DID SAIDI INCREASE IN 2016?	CIRCUIT 5-YEAR AVERAGE (SAIFI)	REPORTING YEAR (2016) SAIFI	DID SAIFI INCREASE IN 2016?
Crescent Springs, Erlanger	5.71	432	4/25/2016	87.037	835.856	YES	1.305	2.853	YES
Covington	7.68	1864	11/2/2013	57.129	174.223	YES	0.668	1.054	YES
Park Hills	21.97	2628	7/2/2014	122.352	213.455	YES	1.421	1.216	NO
Walton	50.7	1516	10/19/2013	100.353	339.508	YES	1.280	1.647	YES
Bellevue	20.77	2157	8/8/2015	64.265	70.914	YES	0.690	0.528	NO
Florence	6.8	626	10/11/2014	131.100	176.890	YES	0.861	1.085	YES
Grant's Lick	60.85	1657	12/19/2015	117.028	242.616	YES	0.958	1.911	YES
Grant's Lick	53.31	1913	10/15/2016	143.311	265.207	YES	1.180	1.641	YES
Claryville	1.48	8	12/5/2015	12.521	14.750	YES	0.356	0.125	NO
Cold Springs	40.35	1141	3/17/2014	89.258	148.311	YES	0.850	1.091	YES
Covington	3.74	981	12/5/2013	56.749	129.537	YES	1.077	2.144	YES
Covington	10.3	2078	11/7/2014	44.595	69.967	YES	0.971	0.380	NO
Crescent Springs	10.5	1800	11/18/2013	138.694	192.116	YES	1.443	1.465	YES
Ft. Mitchell	17.85	1647	12/6/2014	85.303	116.805	YES	0.918	0.460	NO
Crittenden	39.51	1614	12/4/2013	105.365	87.499	NO	0.813	2.017	YES
Dayton	11.12	1527	12/5/2015	20.375	55.869	YES	0.122	0.300	YES
Florence	2.81	20	3/21/2015	32.444	578.200	YES	0.132	2.200	YES
Florence	4.9	41	3/21/2015	14.984	668.877	YES	0.120	2.262	YES
Erlanger and Florence	17.46	2189	11/1/2014	125.904	235.219	YES	1.923	3.730	YES
Erlanger, Florence, CVG	17.98	750	11/15/2014	83.928	249.405	YES	1.700	3.788	YES
Erlanger, Florence, CVG	9.51	636	10/3/2015	28.306	22.667	NO	0.723	1.120	YES
Florence	1.2	1	10/19/2013	247.000	548.000	YES	2.125	1.000	NO
Florence	19.81	1550	6/6/2015	126.638	148.262	YES	1.176	1.090	NO
Florence	8.16	230	6/20/2015	111.068	11.674	NO	0.991	1.034	YES
Dry Ridge	4.81	139	10/17/2012	162.086	246.806	YES	1.429	1.978	YES
Taylor Mill	9.15	316	4/19/2016	18.313	33.111	YES	0.132	0.253	YES
Hebron	6.04	42	Nothing to trim	60.227	61.524	YES	0.653	0.381	NO
Ft. Wright, Ft. Mitchell	19.67	1511	12/5/2013	62.358	111.272	YES	0.607	1.861	YES
Taylor Mill	14.48	955	5/11/2016	50.931	96.318	YES	0.317	0.550	YES
Ft. Wright, Ft. Mitchell	22.53	2298	8/10/2013	82.135	111.997	YES	1.197	1.131	NO
Highland Heights	17.21	761	9/22/2014	28.494	77.875	YES	0.459	2.386	YES
Union, Beaverlick and Florence	41.66	1085	10/19/2013	44.777	99.660	YES	0.416	0.840	YES
Alexandria, Ross and Oneonta	13.54	642	10/19/2013	0.168	58.683	YES	0.001	0.224	YES
Limaburg, Oakbrook and Burling	23.95	2284	10/19/2013	0.016	85.581	YES	0.000	0.305	YES
Union	16.85	1217	11/22/2014	62.296	63.818	YES	0.624	1.026	YES
Camp Springs	60.84	553 new		20.666	492.720	YES	0.145	2.054	YES
Silver Grove	8.33	412 new		27.860	10.229	NO	0.073	0.131	YES
Melbourne	19.79	580 new		92.767	223.635	YES	0.770	2.345	YES
Verona, Piner, Fiskburg and Wal	48.71	852	6/11/2016	205.190	297.734	YES	1.298	1.842	YES
Lakeside Park	14.45	1681	4/25/2014	56.443	83.936	YES	0.601	0.220	NO
Crestview Hills	12.82	884	5/22/2014	66.057	154.215	YES	0.384	0.609	YES
Edgewood	15.94	944	5/16/2014	134.284	172.945	YES	1.836	1.134	NO
Covington, Park Hills	8.94	708	12/5/2013	153.084	400.168	YES	1.191	1.934	YES
Independence, Taylor Mill	76.58	1773	6/11/2016	228.241	544.398	YES	2.472	2.110	NO
Covington, Latonia	9.93	1686	12/24/2016	70.989	115.928	YES	0.807	1.169	YES
Newport	8.1	1739	6/13/2015	10.185	32.536	YES	0.108	0.287	YES
Newport	6.35	1451	4/25/2015	33.361	245.383	YES	0.450	1.610	YES
Walton	47.55	1264	4/6/2013	210.055	210.942	YES	1.980	0.905	NO
Florence	4.37	59	6/6/2015	52.759	236.712	YES	0.414	0.712	YES
Erlanger	2.41	1	3/12/2016	0.000	217.000	YES	0.000	3.000	YES
FT. MITCHELL	31.43	1900	10/18/2014	109.083	147.719	YES	2.000	1.339	NO
FT. MITCHELL	22.1	971 new		0.000	63.853	YES	0.000	0.328	YES
Florence	1.33	9	3/21/2015	87.980	165.778	YES	0.463	1.333	YES
WILLIAMSTOWN	0.01	1	Nothing to trim	0.000	63.000	YES	0.000	1.000	YES
ERLANGER	21.18	1234	12/12/2015	35.259	127.908	YES	0.674	0.606	NO
LATONIA	12.6	1496	12/30/2015	214.033	357.349	YES	1.491	0.911	NO
FLORENCE	18.81	2226	8/22/2015	0.403	0.763	YES	0.004	0.003	NO
UNION	21.83	1547	10/12/2013	7.211	24.339	YES	0.070	0.068	NO
FLORENCE	12.58	936	10/25/2013	12.778	10.053	NO	0.086	0.094	YES
Richwood	5.36	47	11/20/2013	41.204	606.818	YES	0.285	1.365	YES

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SUBSTATION - CIRCUIT	CIRCUIT NAME	CIRCUIT ID	OUTAGE CAUSE	PERCENT OF TOTAL OUTAGE MINUTES	CORRECTIVE ACTION PLAN
ATLAS - H9321700041	ATLAS 41	H9321700041	Equipment Failure	70.747%	Major outage times caused by a tree and faulty Capacitor. Items have been corrected and no further action is needed
			Vegetation	20.047%	
			Planned	4.667%	
			Weather, Storm	4.459%	
			Lightning	0.080%	
			Other	0.000%	
				100.000%	
AUGUSTINE - H9320780042	AUGUSTINE 42	H9320780042	Equipment Failure	96.765%	Mechanical issue at the substation has been corrected. No further action required
			Lightning	1.243%	
			Other	1.229%	
			Planned	0.319%	
			Wildlife	0.257%	
			Vegetation	0.111%	
			Unknown	0.038%	
			Public Accident	0.038%	
	100.000%				
AUGUSTINE - H9320780046	AUGUSTINE 46	H9320780046	Unknown	42.470%	Circuit lockout due to lightning. Restored. No further action required
			Lightning	38.849%	
			Planned	16.275%	
			Vegetation	1.849%	
			Weather, Storm	0.186%	
			Equipment Failure	0.158%	
			Other	0.134%	
			Public Accident	0.079%	
				100.000%	
BEAVER - H9320860041	BEAVER 41	H9320860041	Vegetation	54.040%	Circuit due for full trim in 2017.
			Public Accident	17.221%	
			Equipment Failure	17.130%	
			Unknown	9.062%	
			Planned	1.751%	
			Wildlife	0.627%	
			Other	0.169%	
	100.000%				
BEAVER - H9320860042	BEAVER 42	H9320860042	Vegetation	63.660%	Circuit due for a full trim in 2017.
			Weather, Storm	28.771%	
			Planned	3.469%	
			Other	2.202%	
			Equipment Failure	1.409%	
			Unknown	0.463%	
			Wildlife	0.025%	
			Public Accident	0.000%	
	100.000%				
BELLEVUE - H9321310043	BELLEVUE 43	H9321310043	Vegetation	56.453%	Circuit due for a full trim in 2017.
			Planned	20.853%	
			Public Accident	11.420%	
			Equipment Failure	8.498%	
			Other	1.691%	
			Wildlife	0.939%	
			Unknown	0.146%	
				100.000%	
BUFFINGTON - H9320670042	BUFFINGTON 42	H9320670042	Weather, Storm	92.553%	Equipment failure due to storm. Corrected. No further action required
			Unknown	2.592%	
			Wildlife	2.119%	
			Equipment Failure	1.747%	
			Planned	0.988%	
				100.000%	
BUFFINGTON - H9320670046	BUFFINGTON 46	H9320670046	Equipment Failure	93.790%	Equipment failure at substation. Equipment repaired. No further action required
			Unknown	6.210%	
			Public Accident	0.000%	
			Other	0.000%	
				100.000%	
CLARYVILLE - H9321470041	CLARYVILLE 41	H9321470041	Other	57.905%	2 events: Transmission and storm. Circuit is self-healing from White Tower. No additional action needed.
			Weather, Storm	20.485%	
			Vegetation	10.490%	
			Equipment Failure	8.691%	
			Public Accident	1.064%	
			Planned	1.002%	
			Unknown	0.201%	
			Wildlife	0.113%	
			Lightning	0.050%	
				100.000%	
CLARYVILLE - H9321470042	CLARYVILLE 42	H9321470042	Vegetation	29.015%	1 transmission event and veg biggest issues. Feeder has undergone full circuit trim
			Lightning	23.002%	
			Other	21.916%	
			Weather, Storm	12.357%	
			Equipment Failure	11.670%	
			Planned	1.146%	
			Public Accident	0.658%	
			Unknown	0.171%	
			Wildlife	0.064%	
				100.000%	
CLARYVILLE - H9321470043	CLARYVILLE 43	H9321470043	Planned	100.000%	Planned outage. No further action required
				100.000%	



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COLD SPRING - H9321320041	COLD SPRING 41	H9321320041	Vegetation	60.398%	Planned outages for transformer retrofits. No further action required
			Equipment Failure	13.274%	
			Planned	12.371%	
			Wildlife	5.123%	
			Lightning	4.531%	
			Other	3.188%	
			Unknown	0.528%	
			Weather, Storm	0.454%	
			Public Accident	0.133%	
			100.000%		
CONSTANCE - H9320420043	CONSTANCE 43	H9320420043	Unknown	64.055%	Storm outage to single customer. No additional action required
			Other	22.120%	
			Weather, Storm	13.825%	
			100.000%		
COVINGTON - H9322170042	COVINGTON 42	H9322170042	Equipment Failure	94.059%	2 events due to cable transition equipment failure. Devices replaced. No additional action required.
			Planned	2.224%	
			Unknown	1.429%	
			Other	1.382%	
			Wildlife	0.644%	
			Public Accident	0.262%	
			100.000%		
COVINGTON - H9322170043	COVINGTON 43	H9322170043	Public Accident	94.265%	Equipment repaired. No further action needed
			Equipment Failure	4.517%	
			Other	0.777%	
			Wildlife	0.200%	
			Planned	0.177%	
			Unknown	0.065%	
			Vegetation	0.000%	
			Weather, Storm	0.000%	
			100.000%		
CRESCENT - H9320700041	CRESCENT 41	H9320700041	Vegetation	70.289%	Storm outages. Due for trimming in 2017. No additional actions required
			Weather, Storm	24.700%	
			Unknown	4.365%	
			Equipment Failure	0.312%	
			Wildlife	0.221%	
			Planned	0.051%	
			Other	0.047%	
			loss of transmission	0.014%	
			100.000%		
CRESCENT - H9320700042	CRESCENT 42	H9320700042	Vegetation	59.861%	Storm and de-energization for public safety. No additional actions required
			Equipment Failure	14.462%	
			Other	12.498%	
			Unknown	9.508%	
			Planned	3.173%	
			Public Accident	0.456%	
			Weather, Storm	0.042%	
			loss of transmission	0.000%	
			Lightning	0.000%	
CRESCENT - H9320700043	CRESCENT 43	H9320700043	Lightning	75.068%	Storm related. No additional actions required
			Unknown	13.087%	
			Planned	3.959%	
			Equipment Failure	2.714%	
			Vegetation	2.512%	
			Wildlife	1.859%	
			Weather, Storm	0.566%	
			Other	0.236%	
			100.000%		
CRESCENT - H9320700045	CRESCENT 45	H9320700045	Equipment Failure	56.108%	Storm and UG cable failure. Equipment repaired, No additional actions needed
			Vegetation	35.597%	
			Wildlife	3.653%	
			Other	2.580%	
			Planned	2.062%	
			Public Accident	0.000%	
			100.000%		
CRITTENDEN - H9321240041	CRITTENDEN 41	H9321240041	Public Accident	64.678%	Public accident And planned transformer protection upgrades. Equipment repaired. No further action needed
			Planned	19.180%	
			Equipment Failure	15.114%	
			Other	0.396%	
			Unknown	0.264%	
			Lightning	0.153%	
			Wildlife	0.118%	
			Weather, Storm	0.097%	
			100.000%		
DAYTON - H9320760042	DAYTON 42	H9320760042	Lightning	53.790%	Majority caused by lightning from weather. Fuses replaced. No additional action required
			Wildlife	12.783%	
			Equipment Failure	12.291%	
			Planned	10.719%	
			Vegetation	5.656%	
			Public Accident	1.889%	
			Unknown	1.778%	
			Other	0.691%	
			Weather, Storm	0.403%	
DIXIE - H9320890041	DIXIE 41	H9320890041	Equipment Failure	98.755%	Bus fault within the substation- repaired. No additional action required
			Unknown	1.245%	

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Substation ID	Substation Name	Asset ID	Category	Percentage	Notes
DIXIE - H9320890042	DIXIE 42	H9320890042		100.000%	Bus fault within the substation- repaired. No additional action required
			Equipment Failure	98.566%	
			Public Accident	0.529%	
			Other	0.478%	
			Planned	0.426%	
DIXIE - H9320890044	DIXIE 44	H9320890044	Public Accident	59.920%	Pole replaced. No additional action required
			Equipment Failure	40.080%	
DONALDSON - H9320550041	DONALDSON 41	H9320550041		100.000%	Conductor failure repaired. Transformer retrofits- planned outages. No additional action required
			Equipment Failure	54.670%	
			Unknown	22.866%	
			Other	6.467%	
			Vegetation	4.930%	
			Weather, Storm	4.514%	
			Planned	4.177%	
			Lightning	1.948%	
			Wildlife	0.299%	
			Public Accident	0.131%	
DONALDSON - H9320550043	DONALDSON 43	H9320550043		100.000%	Failed OH to UG pothead- replaced. No additional action required
			Equipment Failure	75.338%	
			Vegetation	15.639%	
			Other	6.238%	
			Weather, Storm	2.430%	
			Planned	0.259%	
DONALDSON - H9320550044	DONALDSON 44	H9320550044		100.000%	Transmission restored. Pole replaced. No additional action required
			Planned	40.365%	
			Equipment Failure	29.252%	
			Weather, Storm	26.489%	
			Vegetation	2.895%	
			Wildlife	0.639%	
			Other	0.361%	
EMPIRE - H9322890042	EMPIRE 42	H9322890042		100.000%	One customer large pad transformer replaced. No additional action required
			Equipment Failure	100.000%	
FLORENCE - H9322410045	FLORENCE 45	H9322410045		100.000%	Broken cross-arm caused multiple equipment failure. Repaired. No additional action required...mab
			Equipment Failure	93.188%	
			Weather, Storm	2.675%	
			Vegetation	2.109%	
			Planned	1.795%	
			Other	0.233%	
			Unknown	0.000%	
Public Accident	0.000%				
FLORENCE - H9322410047	FLORENCE 47	H9322410047		100.000%	Transmission restored. No additional action required
			Weather, Storm	51.582%	
			Equipment Failure	32.676%	
			Planned	10.942%	
			Wildlife	4.801%	
GRANT - H9321610041	GRANT 41	H9321610041	Vegetation	100.000%	Tree removed from line. No additional action required
GRANT - H9321610043	GRANT 43	H9321610043	Equipment Failure	100.000%	Planned Outage to replace equipment
HANDS - H9321280042	HANDS 42	H9321280042		100.000%	Minor problems repaired. No additional action required
			Public Accident	39.855%	
			Vegetation	30.068%	
			Unknown	20.310%	
			Planned	3.613%	
			Lightning	2.552%	
			Wildlife	1.491%	
			Equipment Failure	1.300%	
			Other	0.812%	
HANDS - H9321280044	HANDS 44	H9321280044		100.000%	Majority trees on rear lot lines. Trees removed. No additional action required
			Equipment Failure	61.695%	
			Vegetation	34.857%	
			Planned	3.231%	
			Other	0.157%	
HEBRON - H9321520043	HEBRON 43	H9321520043		100.000%	Minor problems Fuse and connection repaired. No additional action required
			Equipment Failure	100.000%	
KENTON - H9320090041	KENTON 41	H9320090041		100.000%	Neutral repaired. Scheduled OH retrofit outages. No additional action required
			Vegetation	63.956%	
			Planned	21.968%	
			Equipment Failure	11.836%	
			Other	0.704%	
			Weather, Storm	0.544%	
			Lightning	0.504%	
			Wildlife	0.462%	
loss of transmission	0.026%				
KENTON - H9320090042	KENTON 42	H9320090042		100.000%	Lightning- fuses replaced. No additional action required
			Lightning	32.149%	
			Unknown	27.355%	
			Vegetation	23.301%	
			Wildlife	15.594%	
			Weather, Storm	1.021%	
			Other	0.273%	
			Planned	0.173%	
			Equipment Failure	0.134%	
				100.000%	
	58.434%	Tree removed from line. No additional action required			

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Service Area	Branch	ID	Category	Percentage	Notes
KENTON - H9320090043	KENTON 43	H9320090043	Vegetation	40.850%	
			Planned	0.354%	
			Wildlife	0.113%	
			Unknown	0.108%	
			Other	0.048%	
			Equipment Failure	0.047%	
			Lightning	0.046%	
Public Accident	0.000%				
				100.000%	
KENTON - H9320090044	KENTON 44	H9320090044	Vegetation	43.514%	Trees in multiple areas removed and trimmed....No additional action required
			Other	19.598%	
			Equipment Failure	15.211%	
			Planned	9.625%	
			Wildlife	5.313%	
			Public Accident	5.126%	
			Unknown	1.613%	
				100.000%	
KY UNIV - H9322870043	KY UNIV 43	H9322870043	Other	70.093%	Circuit lockout due to HLT for crew working on line. Restored to service. No additional action required
			Vegetation	15.219%	
			Equipment Failure	7.940%	
			Public Accident	3.368%	
			Weather, Storm	2.154%	
			Wildlife	1.226%	
			Lightning	0.000%	
				100.000%	
LONGBRANCH - H9320980041	LONGBRANCH 41	H9320980041	Weather, Storm	55.915%	83% of CMI from 2 events that impacted 1 customer each - All repairs made. No additional action required
			Unknown	34.373%	
			Other	6.180%	
			Wildlife	3.531%	
LONGBRANCH - H9320980042	LONGBRANCH 42	H9320980042	Vegetation	50.936%	80% CMI from Veg and Storms
			Planned	30.912%	Circuit due for full trim in 2017. No additional action required
			Weather, Storm	13.357%	
			Equipment Failure	3.596%	
			Wildlife	0.467%	
			Other	0.447%	
			Public Accident	0.286%	
			Unknown	0.000%	
				100.000%	
LONGBRANCH - H9320980043	LONGBRANCH 43	H9320980043	Lightning	58.387%	Lightning Cause of majority of CMI
			Equipment Failure	38.508%	Circuit due for full trim in 2017
			Public Accident	1.370%	Most of the equipment failure CMI from 1 cable failure that was repaired. No additional action required
			Other	0.993%	
			Vegetation	0.741%	
MT ZION - H9323050043	MT ZION 43	H9323050043	Equipment Failure	66.426%	50% CMI from 1 event due to defective Hot Line Clamp - Repairs made
			Vegetation	23.509%	Due for full trim in 2017 No additional action required
			Planned	7.610%	
			Other	1.594%	
			Unknown	0.861%	
			Weather, Storm	0.000%	
				100.000%	
OAKBROOK STA - H9322100041	OAKBROOK STA 41	H9322100041	Equipment Failure	39.187%	97% CMI from 3 events - Corrections made at the time of event
			Other	34.217%	Circuit due for full trim in 2017. No additional action required
			Vegetation	26.174%	
			Unknown	0.422%	
			Public Accident	0.000%	
				100.000%	
OAKBROOK STA - H9322100042	OAKBROOK STA 42	H9322100042	Equipment Failure	70.289%	Majority of CMI from 3 different events- Repairs made
			Planned	11.550%	Circuit due for full trim in 2017. No additional action required
			Vegetation	10.701%	
			Public Accident	7.123%	
			Other	0.142%	
			Unknown	0.141%	
			Lightning	0.054%	
			Wildlife	0.000%	
				100.000%	
RICHWOOD - H9321990041	RICHWOOD 41	H9321990041	Vegetation	64.172%	87% CMI from same outage event - Repairs made at time of event No additional action required
			Equipment Failure	33.149%	
			Other	2.102%	
			Public Accident	0.351%	
			Wildlife	0.225%	
				100.000%	
RICHWOOD - H9321990043	RICHWOOD 43	H9321990043	Public Accident	94.153%	91% of CMI from 1 auto damage. No additional action required
			Weather, Storm	4.409%	
			Equipment Failure	0.591%	
			Other	0.373%	
			Unknown	0.345%	
			Planned	0.129%	
				100.000%	
SILVER GROVE - H9320620041	SILVER GROVE 41	H9320620041	Vegetation	71.253%	Majority of Veg CMI from 1 events
			Equipment Failure	23.542%	Equipment failures repaired at the time of event
			Lightning	2.646%	All transformers to be retrofitted in 2017 No additional action required
			Planned	1.511%	
			Other	0.865%	

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				Unknown	0.115%
				Wildlife	0.048%
				Public Accident	0.019%
					100.000%
SILVER GROVE - H9320620042	SILVER GROVE 42	H9320620042		Unknown	49.074%
				Weather, Storm	24.786%
				Planned	7.835%
				Other	5.840%
				Wildlife	5.437%
				Public Accident	3.680%
				Vegetation	3.348%
					100.000%
SILVER GROVE - H9320620043	SILVER GROVE 43	H9320620043		Public Accident	58.319%
				Vegetation	22.013%
				Other	9.310%
				Lightning	4.602%
				Planned	3.474%
				Weather, Storm	2.077%
				Unknown	0.178%
				Equipment Failure	0.027%
					100.000%
VERONA - H9321250041	VERONA 41	H9321250041		Public Accident	87.113%
				Weather, Storm	7.150%
				Equipment Failure	3.136%
				Planned	0.823%
				Lightning	0.761%
				Vegetation	0.599%
				Unknown	0.201%
				Wildlife	0.169%
				loss of transmission	0.048%
					100.000%
VILLA - H9322430041	VILLA 41	H9322430041		Weather, Storm	75.573%
				Vegetation	16.038%
				Other	3.292%
				Unknown	2.962%
				Planned	1.724%
				Wildlife	0.276%
				Equipment Failure	0.135%
				Public Accident	0.000%
					100.000%
VILLA - H9322430042	VILLA 42	H9322430042		Weather, Storm	83.476%
				Equipment Failure	15.769%
				Unknown	0.715%
				Wildlife	0.040%
				Other	0.000%
				Planned	0.000%
					100.000%
VILLA - H9322430043	VILLA 43	H9322430043		Vegetation	86.308%
				Equipment Failure	7.167%
				Wildlife	5.139%
				Weather, Storm	1.252%
				Unknown	0.078%
				Other	0.055%
					100.000%
WEST END STA - H40C0150041	WEST END STA 41	H40C0150041		Equipment Failure	58.928%
				Vegetation	21.415%
				Wildlife	6.703%
				Public Accident	5.201%
				Unknown	2.882%
				Weather, Storm	2.320%
				Planned	1.689%
				Other	0.862%
					100.000%
WHITE TOWER - H9323040041	WHITE TOWER 41	H9323040041		Weather, Storm	75.638%
				Vegetation	19.887%
				Unknown	2.529%
				Equipment Failure	1.071%
				Planned	0.358%
				Public Accident	0.187%
				Lightning	0.152%
				Other	0.094%
				Wildlife	0.085%
					100.000%
WILDER - H9320590043	WILDER 43	H9320590043		Other	91.116%
				Planned	5.079%
				Wildlife	1.790%
				Equipment Failure	1.485%
				Public Accident	0.229%
				Vegetation	0.108%
				Unknown	0.098%
				Weather, Storm	0.094%
					100.000%
YORK - H9320770041	YORK 41	H9320770041		Planned	66.096%
				Wildlife	23.359%
				Other	5.513%

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			Equipment Failure	4.512%	
			Unknown	0.520%	
				100.000%	
YORK - H9320770043	YORK 43	H9320770043	Equipment Failure	46.044%	Clearance issue over steel traffic pole caused over 75% of CMI - Has been redesigned - No additional action required
			Public Accident	26.975%	
			Unknown	24.764%	
			Weather, Storm	1.200%	
			Planned	0.673%	
			Other	0.265%	
			Lightning	0.061%	
			Vegetation	0.017%	
				100.000%	

## Duke Energy Kentucky's Vegetation Management Plan

### Goals

Duke Energy's goals for its Vegetation Management Operations are to balance the need for reliable utility service with safe and cost-effective vegetation management practices that preserve our local communities' natural surroundings, aesthetics and the environment. Targeted herbicides provide one of the most cost-effective and environmentally friendly means of controlling undesirable vegetation.

### Safety

Our goals are to work safely at all times to achieve a zero injury culture and to minimize the safety risk of vegetation and conductor contacts. Serious or fatal shocks can occur when working in trees near power lines. Duke Energy strives to minimize that risk by trimming properly in accordance with industry tree trimming safety standards.

### Reliability

Duke Energy's electric service reliability, as measured by SAIFI and SAIDI, has improved in recent years due in part to our more rigorous tree trimming practices. Duke Energy strives to trim its Kentucky distribution circuits every four-and-one-half years and transmission every six years.

### Tree Care Standards

Duke Energy requires its employees and contractors to prune trees in accordance with American National Standards Institute (ANSI) and National Arborist Association (NAA) standards. The relevant standards are ANSI Z133, Safety in Tree Trimming Operations, and ANSI A300, Safety in Tree Care Operations. These ANSI standards were developed in cooperation with the NAA. Additionally, Duke Energy follows the practices in Field Guide for Qualified Line Clearance Tree Workers by Dr. Alex L. Shigo, former head of the U.S. Forest Service. In rural areas, Duke Energy may authorize its contractors to use mechanized pruning equipment.

### Tree Trimming Specifications

#### 69KV and above Transmission Lines

- 15 feet clearance to the side from all conductors.
- 15 feet clearance below the lowest conductor.
- No overhanging/encroaching branches permitted.
- Trim to the previously established widths of our right-of-way and practice established beyond the 15 feet widths.

### 3 Phase Primary Lines and 2 Phase Primary Lines

- 10 feet clearance to the side from all conductors.
- 10 feet clearance below the conductors.
- No overhanging/encroaching branches.

### Single Phase

- 10 feet clearance to the side from all conductors.
- 10 feet clearance below the conductors.
- Overhang: all live branches above the conductors shall be removed to a minimum height of 15 feet, and at a 45-degree angle. All dead and structurally weak branches overhanging any primary voltage wires shall be removed.
- Underneath the primary: 10 feet clearance from the conductors to the closest limbs beneath the phases.

### Secondary Lines

- 5 feet clearance to the side from the secondary line.
- 5 feet clearance above and below the secondary line.

### Services Lines

- 1 foot swing clearance from all service lines.

### Brush/Wood Removal

- Circuit maintenance - brush is removed, wood cut into movable pieces.
- Customer may request off-cycle maintenance in accordance with the clearance standards above - brush and wood is customer's responsibility.
- Storm Work - no brush or wood removal.

### Customer Notification

- Duke Energy customers are notified of tree trimming being done on their property by door hanger cards.
- Duke Energy requires its contractors to contact local government officials prior to beginning work in the community.

### Right Tree In The Right Place

- Duke Energy will cooperate in tree removal with local government officials as needed.

Determination of Need to Perform Maintenance/Evaluation of Plan Effectiveness

Duke Energy regularly monitors its SAIFI and SAIDI measures. If SAIFI or SAIDI were to significantly decline, Duke Energy would evaluate whether to modify its vegetation management practices, including its right-of-way clearing cycle, in order to improve SAIFI and SAIDI performance. Duke Energy also monitors the performance of individual circuits. If an individual circuit has a significant number of outages, Duke Energy will perform off-cycle tree trimming as needed. Duke Energy also monitors industry tree trimming standards and modifies its tree trimming practices as necessary to meet or exceed industry standards.