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April 29, 2016

RECEIVED

MAY 02 2016

PUBLIC SERVICE  
COMMISSION

**VIA OVERNIGHT DELIVERY**

Mr. Kyle Willard  
Kentucky Public Service Commission  
211 Sower Boulevard  
P.O. Box 615  
Frankfort, KY 40602

**RE: 2015 Reliability Report and Vegetation Management Plan Update**

Dear Mr. Willard:

Enclosed please find a signed paper and one electronic copy of the Duke Energy Kentucky, Inc. 2015 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

RECEIVED

MAY 02 2016

PUBLIC SERVICE  
COMMISSION

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

An Investigation of the Reliability )  
Measures of Kentucky's Jurisdictional )  
Electric Distribution Utilities )

Administrative  
Case No. 2011-00450

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**DUKE ENERGY KENTUCKY, INC.'S  
PETITION FOR THE CONFIDENTIAL TREATMENT OF CERTAIN  
INFORMATION FILED FOR CALENDAR YEAR 2015**

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Duke Energy Kentucky, Inc. (Duke Energy Kentucky or Company) respectfully submits this petition in accordance with 807 KAR 5:001 Section 13, seeking the confidential treatment of certain information filed for calendar year 2014:

1. On January 11, 2012, the Commission issued an Order in this proceeding requiring Duke Energy Kentucky to collect and maintain all records necessary to evaluate its system reliability performance in accordance with the methodology established by the most recent edition of the ("IEEE") standard number 1366 "Guide for Electric Power Distribution Reliability Indices," which currently is IEEE Standard 1366-2012.

2. 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.

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 2015 Reliability Report and Vegetation Management Plan and one copy of Exhibit A of the 2015 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).

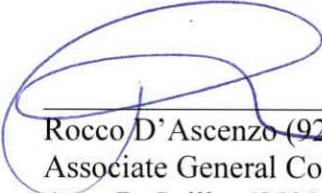
10. This information was, and remains, integral to Duke Energy Kentucky's effective execution of business decisions. And such information is generally regarded as confidential or proprietary. Indeed, as the Kentucky Supreme Court has found, "information concerning the inner workings of a corporation 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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Rocco D'Ascenzo (92796)

Associate General Counsel

Amy B. Spiller (85309)

Deputy General Counsel

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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 29<sup>th</sup> day of April, 2016:

Larry Cook  
The Office of the Attorney General  
1024 Capital Center Drive  
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 2015

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April 29, 2016

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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 2015 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 (Le., 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.<sup>3</sup>

### **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>4</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 amendments or changes to the plan since it was initially filed with the Commission on December 18, 2007. There are no amendments or changes planned for 2016.

As part of its 2016 plan, Duke Energy Kentucky plans to trim trees and maintain vegetation along 313.72 miles of its distribution system. Although the weather conditions were harsh at times, Duke Energy Kentucky was able to get a good start on our Vegetation Plan for 2016. As of April 27, 2016, Duke Energy Kentucky has completed approximately 31.1% of its scheduled trimming, or approximately 97.72 miles of its distribution system. This leaves

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

approximately 216 miles to be trimmed in 2016. The Company does not anticipate any difficulty in completing all planned trimming for 2016. The Company will have sufficient crew coverage throughout the year.

Respectfully submitted,



Rocco O. D'Ascenzo (92796)  
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Amy B. Spiller (85309)  
Deputy General Counsel  
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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	2015
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**SECTION 3: MAJOR EVENT DAYS (MED)**

T <sub>MED</sub>	4.79
FIRST DATE USED TO DETERMINE T <sub>MED</sub>	Jan 1, 2010
LAST DATE USED TO DETERMINE T <sub>MED</sub>	December 31, 2014
NUMBER OF MED IN REPORT YEAR	3

NOTE: Per IEEE 1366 T<sub>MED</sub> 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	137,431	TOTAL CIRCUITS	134
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**Excluding MED**

5 YEAR AVERAGE		REPORTING YEAR	
SAIDI	115.91	SAIDI	98.33
SAIFI	1.211	SAIFI	0.979

**Including MED**

5 YEAR AVERAGE		REPORTING YEAR	
SAIDI	186.15	SAIDI	178.60
SAIFI	1.451	SAIFI	1.195

**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 T<sub>MED</sub>

Duke Energy Kentucky  
Reliability Report and Vegetation Management  
For Calendar Year 2015  
Exhibit A  
Page 2 of 9

CIRCUIT NUMBER	SUBSTATION NAME	SUBSTATION NUMBER	SUBSTATION COUNTY	SUBSTATION ROAD	SUBSTATION TOWN	CIRCUIT NAME	CIRCUIT ID	CIRCUIT NUMBER	CIRCUIT TOWN
H9322050041	ALEXANDRIA SOUTH	205	CAMPBELL		ALEXANDRIA	ALEXANDRIA SOUTH 41	H9322050041	41	ALEXANDRIA
H9320780042	AUGUSTINE	78	KENTON		COVINGTON	AUGUSTINE 42	H9320780042	42	COVINGTON
H9320780043	AUGUSTINE	78	KENTON		COVINGTON	AUGUSTINE 43	H9320780043	43	COVINGTON
H9320780044	AUGUSTINE	78	KENTON		COVINGTON	AUGUSTINE 44	H9320780044	44	COVINGTON
H9320780045	AUGUSTINE	78	KENTON		COVINGTON	AUGUSTINE 45	H9320780045	45	COVINGTON
H9320780046	AUGUSTINE	78	KENTON		COVINGTON	AUGUSTINE 46	H9320780046	46	PARK HILLS
H9320860042	BEAVER	86	BOONE		WALTON	BEAVER 42	H9320860042	42	WALTON
H9320670041	BUFFINGTON	67	KENTON		FLORENCE	BUFFINGTON 41	H9320670041	41	ERLANGER
H9320670043	BUFFINGTON	67	KENTON		FLORENCE	BUFFINGTON 43	H9320670043	43	FLORENCE
H9320670046	BUFFINGTON	67	KENTON		FLORENCE	BUFFINGTON 46	H9320670046	46	FLORENCE
H9320670047	BUFFINGTON	67	KENTON		FLORENCE	BUFFINGTON 47	H9320670047	47	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
H9321320041	COLD SPRING	132	CAMPBELL		COLD SPRINGS	COLD SPRING 41	H9321320041	41	COLD SPRINGS
H9321320049	COLD SPRING	132	CAMPBELL		COLD SPRINGS	COLD SPRING 49	H9321320049	49	COLD SPRINGS
H9320420041	CONSTANCE	42	BOONE		ERLANGER	CONSTANCE 41	H9320420041	41	TAYLORSPOUT
H9320420042	CONSTANCE	42	BOONE		ERLANGER	CONSTANCE 42	H9320420042	42	VILLA HILLS
H9320420044	CONSTANCE	42	BOONE		ERLANGER	CONSTANCE 44	H9320420044	44	ERLANGER
H9322170041	COVINGTON	217	KENTON		COVINGTON	COVINGTON 41	H9322170041	41	COVINGTON
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 SPRINGS
H9320700043	CRESCENT	70	KENTON		FT. MITCHELL	CRESCENT 43	H9320700043	43	FT. MITCHELL
H9321240041	CRITTENDEN	124	GRANT		CRITTENDEN	CRITTENDEN 41	H9321240041	41	CRITTENDEN
H9321240042	CRITTENDEN	124	GRANT		CRITTENDEN	CRITTENDEN 42	H9321240042	42	CRITTENDEN
H9320760041	DAYTON	76	CAMPBELL		DAYTON	DAYTON 41	H9320760041	41	DAYTON
H9320760042	DAYTON	76	CAMPBELL		DAYTON	DAYTON 42	H9320760042	42	DAYTON
H9320760043	DAYTON	76	CAMPBELL		DAYTON	DAYTON 43	H9320760043	43	DAYTON
H9322990041	DECORSEY	299	KENTON		TAYLOR MILL	DECORSEY 41	H9322990041	41	TAYLOR MILL
H9320890041	DIXIE	89	BOONE		FLORENCE	DIXIE 41	H9320890041	41	FLORENCE
H9320890042	DIXIE	89	BOONE		FLORENCE	DIXIE 42	H9320890042	42	FLORENCE
H9321090041	DRY RIDGE	109	GRANT		DRY RIDGE	DRY RIDGE 41	H9321090041	41	DRY RIDGE
H9321090042	DRY RIDGE	109	GRANT		DRY RIDGE	DRY RIDGE 42	H9321090042	42	DRY RIDGE
H9322410043	FLORENCE	241	BOONE		FLORENCE	FLORENCE 43	H9322410043	43	FLORENCE
H9322410044	FLORENCE	241	BOONE		FLORENCE	FLORENCE 44	H9322410044	44	FLORENCE
H9322410046	FLORENCE	241	BOONE		FLORENCE	FLORENCE 46	H9322410046	46	FLORENCE
H9321610041	GRANT	161	GRANT		WILLIAMSTOWN	GRANT 41	H9321610041	41	DRY RIDGE
H9321280042	HANDS	128	KENTON		COVINGTON	HANDS 42	H9321280042	42	TAYLOR MILL
H9321280045	HANDS	128	KENTON		COVINGTON	HANDS 45	H9321280045	45	TAYLOR MILL
H9321520044	HEBRON	152	BOONE		HEBRON	HEBRON 44	H9321520044	44	HEBRON
H9321520045	HEBRON	152	BOONE		HEBRON	HEBRON 45	H9321520045	45	HEBRON
H9320090042	KENTON	9	KENTON		LAKEVIEW	KENTON 42	H9320090042	42	TAYLOR MILL
H9320090044	KENTON	9	KENTON		LAKEVIEW	KENTON 44	H9320090044	44	FT. WRIGHT
H9320090045	KENTON	9	KENTON		LAKEVIEW	KENTON 45	H9320090045	45	LATONIA
H9320090046	KENTON	9	KENTON		LAKEVIEW	KENTON 46	H9320090046	46	LAKEVIEW
H9321890041	LIMABURG	189	BOONE		LIMABURG	LIMABURG 41	H9321890041	41	HEBRON
H9322100041	OAKBROOK	210	BOONE		FLORENCE	OAKBROOK 41	H9322100041	41	ALEXANDRIA
H9322100042	OAKBROOK	210	BOONE		FLORENCE	OAKBROOK 42	H9322100042	42	FLORENCE
H9321990042	RICHWOOD	199	BOONE		RICHWOOD	RICHWOOD 42	H9321990042	42	RICHWOOD
H9321990043	RICHWOOD	199	BOONE		RICHWOOD	RICHWOOD 43	H9321990043	43	RICHWOOD
H9321340041	THOMAS MORE	134	BOONE		EDGEWOOD	THOMAS MORE 41	H9321340041	41	EDGEWOOD
H9321340042	THOMAS MORE	134	BOONE		EDGEWOOD	THOMAS MORE 42	H9321340042	42	EDGEWOOD
H9321250042	VERONA	125	KENTON		CRITTENDEN	VERONA 42	H9321250042	42	CRITTENDEN
H9322430041	VILLA	243	KENTON		EDGEWOOD	VILLA 41	H9322430041	41	CRESTVIEW HILLS
H9322430042	VILLA	243	KENTON		EDGEWOOD	VILLA 42	H9322430042	42	CRESTVIEW HILLS
H9323040041	WHITE TOWER	304	KENTON		INDEPENDENCE	WHITE TOWER 41	H9323040041	41	INDEPENDENCE
H9320590040	WILDER	59	KENTON		WILDER	WILDER 40	H9320590040	40	NEWPORT
H9320590041	WILDER	59	KENTON		WILDER	WILDER 41	H9320590041	41	SOUTHGATE
H9320770042	YORK	77	CAMPBELL		NEWPORT	YORK 42	H9320770042	42	NEWPORT
H9320770043	YORK	77	CAMPBELL		NEWPORT	YORK 43	H9320770043	43	NEWPORT

**Duke Energy Kentucky**  
**Reliability Report and Vegetation Management**  
**For Calendar Year 2015**  
**Exhibit A**  
**Page 3 of 9**

CIRCUIT ROAD	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 (2015) SAIDI	DID SAIDI INCREASE IN 2015?	CIRCUIT 5-YEAR AVERAGE (SAIFI)	REPORTING YEAR (2015) SAIFI	DID SAIFI INCREASE IN 2015?
	Alexandria, Ross and Oneonta	28.63	1995	3/17/2014	115.203	165.663	YES	0.921	1.363	YES
	Covington	15.41	1848	11/2/2013	87.883	98.173	YES	0.819	2.018	YES
	Covington	0.31	418	10/19/2013	58.772	21.766	NO	0.661	1.856	YES
	Covington	0.03	635	11/18/2013	46.305	229.146	YES	0.432	4.822	YES
	Covington	25.18	2364	9/27/2013	39.633	71.691	YES	0.300	1.243	YES
	Park Hills	35.12	2631	7/2/2014	83.011	227.660	YES	0.655	4.012	YES
	Walton	60.9	1492	10/19/2013	126.428	176.828	YES	2.047	1.347	NO
	Elsmere	20.35	1818	11/7/2014	29.347	70.949	YES	0.320	0.699	YES
	Florence	2.69	55	11/7/2014	101.126	101.764	YES	0.732	0.855	YES
	Florence	8.9	620	10/11/2014	120.722	101.331	NO	0.786	1.005	YES
	Florence	22.36	1811	5/9/2015	115.364	74.882	NO	1.018	1.124	YES
	Grant's Lick	70.24	1637	12/19/2015	108.195	275.459	YES	1.193	1.796	YES
	Grant's Lick	66.15	1906	4/7/2012	122.919	255.268	YES	1.119	1.644	YES
	Cold Springs	47.12	1077	3/17/2014	74.092	157.389	YES	0.683	1.514	YES
	Highland Heights	30.05	904	7/22/2014	122.616	154.373	YES	1.044	0.942	NO
	Taylorsport	43.88	417	10/17/2012	294.872	298.343	YES	3.009	2.374	NO
	Villa Hills	28.73	1622	10/17/2012	163.727	216.496	YES	2.093	0.816	NO
	Erlanger	11.5	320	12/19/2015	164.498	41.897	NO	1.234	1.825	YES
	Covington	13.36	1000	12/5/2013	58.067	108.619	YES	1.232	1.187	NO
	Covington	7.73	968	12/5/2013	42.764	98.220	YES	0.918	1.143	YES
	Covington	20.93	2091	11/7/2014	29.156	82.416	YES	0.600	1.311	YES
	Crescent Springs	23.47	1961	11/18/2013	111.586	198.100	YES	1.382	1.264	NO
	Ft. Mitchell	26.37	1645	12/6/2014	77.479	190.129	YES	0.906	2.497	YES
	Crittenden	45.64	1610	12/4/2013	89.250	109.467	YES	0.750	0.893	YES
	Crittenden	29.39	892	8/10/2013	94.476	471.395	YES	0.745	2.944	YES
	Dayton	9.27	1030	11/23/2015	26.330	73.513	YES	0.219	0.141	NO
	Dayton	19.39	1536	12/5/2015	18.243	35.605	YES	0.122	0.158	YES
	Dayton	9.51	832	12/19/2015	37.354	66.742	YES	0.530	0.224	NO
	Taylor Mill	48.32	1964	2/8/2013	168.934	317.307	YES	2.805	3.199	YES
	Florence	3.56	19	3/21/2015	17.840	78.737	YES	0.110	0.158	YES
	Florence	5.21	41	3/21/2015	10.112	25.366	YES	0.078	0.220	YES
	Dry Ridge	11.07	567	10/20/2012	88.940	244.280	YES	0.992	1.466	YES
	Dry Ridge	3.64	155	10/20/2012	95.314	226.484	YES	0.966	1.813	YES
	Florence Mall	2.43	10	Nothing to trim	176.620	283.500	YES	1.220	0.500	NO
	Florence	19.04	838	5/16/2015	56.136	103.593	YES	0.849	2.078	YES
	Florence	17.62	951	7/25/2015	119.507	100.277	NO	1.230	2.049	YES
	Dry Ridge	5.78	137	10/17/2012	134.401	200.642	YES	1.301	1.511	YES
	Taylor Mill	11.17	294	10/6/2012	9.891	46.929	YES	0.089	0.204	YES
	Taylor Mill	22.92	859	6/1/2013	57.425	76.437	YES	0.826	0.279	NO
	Park West International	3.79	24	Nothing to trim	251.216	33.292	NO	1.551	1.583	YES
	Hebron	17.32	445	5/17/2014	38.286	215.665	YES	1.223	5.382	YES
	Taylor Mill	19.99	956	5/18/2012	30.272	91.329	YES	0.249	0.259	YES
	Ft. Wright, Ft. Mitchell	35.43	2289	8/10/2013	60.966	197.431	YES	0.724	3.460	YES
	Ft. Wright, Latonia	26.79	2161	12/8/2015	38.880	62.944	YES	0.526	1.162	YES
	Edgewood and Fort Wright	18.87	669	8/10/2013	146.740	205.611	YES	1.285	3.052	YES
	Hebron	31.67	1376	12/13/2014	101.237	129.980	YES	1.430	1.167	NO
	Alexandria, Ross and Oneonta	15.1	649	10/19/2013	0.168	163.407	YES	0.001	0.972	YES
	Limaburg, Oakbrook and Burlingl	27.51	2268	10/19/2013	0.016	130.577	YES	0.000	0.556	YES
	Richwood	38.05	1917	11/12/2013	67.212	166.618	YES	0.536	0.845	YES
	Union	21.16	1211	11/22/2014	55.573	39.065	NO	0.441	0.919	YES
	Edgewood	1.7	9	12/13/2014	4.622	103.000	YES	0.044	1.000	YES
	Edgewood	9.41	436	11/22/2014	18.146	168.796	YES	0.215	1.060	YES
	Walton	28.42	733	10/26/2013	78.672	91.737	YES	0.494	1.034	YES
	Lakeside Park	21.66	1677	4/25/2014	57.934	42.902	NO	0.450	1.182	YES
	Crestview Hills	16.57	885	5/22/2014	57.547	55.951	NO	0.313	0.466	YES
	Independence, Taylor Mill	91.66	1755	4/13/2012	229.121	379.599	YES	2.688	3.459	YES
	Newport	9.7	769	8/15/2015	40.815	222.442	YES	0.485	1.047	YES
	Southgate, Ft. Thomas	22.5	1471	5/25/2012	147.626	167.351	YES	1.617	1.063	NO
	Newport	9.12	1028	11/7/2014	13.707	49.366	YES	0.104	0.241	YES
	Newport	12.15	1458	4/25/2015	27.429	39.396	YES	0.345	0.620	YES

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SUBSTATION - CIRCUIT	CIRCUIT NAME	CIRCUIT ID	OUTAGE CAUSE	PERCENT OF TOTAL OUTAGE MINUTES	CORRECTIVE ACTION PLAN
ALEXANDRIA SOUTH - H9322050041	ALEXANDRIA SOUTH 41	H9322050041	Equipment failure	34.958%	27.1% circuit customer minutes of interruption due to one outage coded as two events. A conductor was found burned. Conductor replaced, no further action necessary. Two outages caused by lightning were responsible for 18.74% circuit customer minutes of interruption. All damaged equipment was replaced. No further action necessary.
			Lightning strike	19.614%	
			Other Cause	8.804%	
			Planned (IEEE)	1.545%	
			Public Accident	10.757%	
			Unknown Cause	0.095%	
			Vegetation	19.321%	
			Weather	4.691%	
Wildlife	0.216%				
				100.000%	
AUGUSTINE - H9320780042	AUGUSTINE 42	H9320780042	Equipment failure	97.136%	Two outages caused 95.94% of customer minutes of interruption due to Equipment Failure. On 6/26/15 one event caused 11.10% of minutes and was caused by a jumper failure on the transmission line serving Augustine Station. On 6/28/2015 a failure on a transmission line caused an outage responsible for 84.84% of customer minutes of interruption. The issue causing the fault on the transmission line was fixed. As these two outages account for 95.94% of customer minutes of interruption on this circuit and each piece of equipment has been fixed, there is no further corrective action needed.
			Other Cause	0.472%	
			Planned (IEEE)	1.331%	
			Public Accident	0.210%	
			Unknown Cause	0.800%	
			Wildlife	0.051%	
AUGUSTINE - H9320780043	AUGUSTINE 43	H9320780043	Equipment failure	92.735%	92.735% of customer minutes of interruption for this circuit were due to one event on 6/26/15 due to a jumper failure on transmission line serving Augustine Station. As the transmission line was repaired, no further corrective action is necessary.
			Other Cause	6.485%	
			Unknown Cause	0.780%	
AUGUSTINE - H9320780044	AUGUSTINE 44	H9320780044	Equipment failure	85.323%	Two outages coded as three events are responsible for 84% customer minutes of interruption on this circuit. On 6/26/15 one event caused 10.61% of customer minutes of interruption and was caused by a jumper failure on the transmission line serving Augustine Station. On 6/28/2015 a failure on a transmission line caused an outage responsible for 73.39% of customer minutes of interruption on this circuit. The issue causing the fault on the transmission line was fixed. As these two outages account for 84% of customer minutes of interruption on this circuit and each piece of equipment has been fixed, there is no further corrective action needed.
			Other Cause	0.386%	
			Planned (IEEE)	1.509%	
			Public Accident	0.110%	
			Unknown Cause	0.397%	
			Vegetation	3.699%	
			Wildlife	8.527%	
AUGUSTINE - H9320780045	AUGUSTINE 45	H9320780045	Equipment failure	70.539%	Three outages coded as four events are responsible for 70.36% of circuit customer minutes of interruption. On 6/26/15 one event caused 6.33% of customer minutes of interruption and was caused by a jumper failure on the transmission line serving Augustine Station. On 6/28/2015 a failure on a transmission line caused an outage responsible for 47.32% of customer minutes of interruption on this circuit. The issue causing the fault on the transmission line was fixed. On 9/19/15 a recloser failed causing 16.71% circuit customer minutes of interruption. As each piece of equipment has been fixed, there is no further corrective action needed.
			Other Cause	0.979%	
			Planned (IEEE)	0.173%	
			Public Accident	1.295%	
			Unknown Cause	15.787%	
			Wildlife	11.227%	
AUGUSTINE - H9320780046	AUGUSTINE 46	H9320780046	Equipment failure	72.569%	Three events coded as four outages were responsible for 67.66% circuit customer minutes of interruption. On 6/26/15 one event caused 5.17% of customer minutes of interruption and was caused by a jumper failure on the transmission line serving Augustine Station. On 6/28/2015 a failure on a transmission line caused an outage responsible for 36.66% of customer minutes of interruption on this circuit. The issue causing the fault on the transmission line was fixed. On 9/19/15 a feeder exit cable burned up and caused 25.83% customer minutes of interruption. This cable was replaced. As these three outages account for 67.66% of customer minutes of interruption on this circuit and each piece of equipment has been fixed, there is no further corrective action needed.
			Lightning strike	1.963%	
			Other Cause	1.393%	
			Planned (IEEE)	1.795%	
			Public Accident	0.174%	
			Unknown Cause	0.312%	
			Vegetation	21.617%	
			Weather	0.026%	
			Wildlife	0.152%	
BEAVER - H9320860042	BEAVER 42	H9320860042	Equipment failure	0.067%	81.24% of circuit customer minutes of interruption due to two vehicle accidents coded as five events. All damaged equipment repaired. No additional actions are necessary.
			Lightning strike	4.428%	
			Other Cause	0.452%	
			Planned (IEEE)	0.366%	
			Public Accident	85.387%	
			Unknown Cause	0.718%	
			Vegetation	1.095%	
			Weather	0.510%	
Wildlife	6.976%				
BUFFINGTON - H9320670041	BUFFINGTON 41	H9320670041	Equipment failure	53.017%	Three events caused 35.78% circuit customer minutes of interruption which were 64.7% of unplanned customer minutes of interruption. All equipment has been repaired/replaced and no further action is necessary.
			Other Cause	1.529%	
			Planned (IEEE)	44.615%	
			Unknown Cause	0.823%	
			Weather	0.000%	
			Wildlife	0.015%	
BUFFINGTON - H9320670043	BUFFINGTON 43	H9320670043	Equipment failure	32.732%	28.3% of circuit customer minutes of interruption (and 85.4% of equipment failures on this circuit) due to one outage 10/27/15. All equipment was repaired. No further action is necessary. One outage due to lightning on 4/8/15 caused 48.24% of circuit customer minutes of interruption. All equipment was repaired. No further action necessary. One outage on 5/17/15 caused 14.58% circuit customer minutes of interruption (and 99.99% of "unknown" failures). If equipment was replaced and no further action is necessary.
			Lightning strike	48.240%	
			Planned (IEEE)	4.449%	
			Unknown Cause	14.579%	
BUFFINGTON - H9320670046	BUFFINGTON 46	H9320670046	Equipment failure	0.205%	One accident on 11/24/15 coded as three events caused 99.295% circuit customer minutes of interruption. All equipment was repaired and/or replaced. No further action necessary.
			Lightning strike	0.196%	
			Other Cause	0.126%	
			Public Accident	99.295%	
			Unknown Cause	0.000%	
			Weather	0.178%	
Wildlife	0.000%				

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BUFFINGTON - H9320670047	BUFFINGTON 47	H9320670047	Equipment failure	82.19%	81.94% circuit customer minutes of interruption were due to one outage caused by a pole failure on 5/5/15 coded as th events. The pole has been replaced. No further action is necessary.
			Other Cause	0.367%	
			Planned (IEEE)	1.681%	
			Public Accident	4.425%	
			Unknown Cause	4.059%	
			Vegetation	2.478%	
			Weather	0.852%	
Wildlife	3.938%				
CLARYVILLE - H9321470041	CLARYVILLE 41	H9321470041	Equipment failure	5.517%	One outage coded as two events on 10/24/15 caused 43.69% circuit customer minutes of interruption when a transmission line had a fault near Claryville Station. No further action is necessary. One outage coded as three events on 11/9/15 caused 14.82% circuit customer minutes when a limb landed on a line and caught fire. All equipment has been repaired, no further action is necessary.
			Lightning strike	8.771%	
			Other Cause	0.066%	
			Planned (IEEE)	4.415%	
			Public Accident	1.740%	
			Unknown Cause	43.748%	
			Vegetation	35.585%	
Weather	0.000%				
Wildlife	0.159%				
CLARYVILLE - H9321470042	CLARYVILLE 42	H9321470042	Equipment failure	61.982%	One outage coded as two events on 10/24/15 caused 47.69% circuit customer minutes of interruption when a transmission line had a fault near Claryville Station. The fault was cleared and no further actions necessary. One outage caused 25.62% circuit customer minutes of interruption on 10/28/15 when a dead ash tree 85' outside pole line fell across the line. All equipment has been repaired/replaced and no further actions necessary.
			Lightning strike	4.033%	
			Other Cause	0.183%	
			Planned (IEEE)	2.067%	
			Public Accident	0.049%	
			Unknown Cause	0.737%	
			Vegetation	30.359%	
Weather	0.431%				
Wildlife	0.160%				
COLD SPRING - H9321320041	COLD SPRING 41	H9321320041	Equipment failure	22.504%	One outage due to a fuse on 5/26/15 caused 20.20% circuit customer minutes of interruption. All equipment repaired/replaced. No further action necessary. One vehicular accident on 10/19/15 caused 40.10% circuit customer minutes of interruption. No further actions necessary.
			Lightning strike	6.155%	
			Other Cause	0.350%	
			Planned (IEEE)	0.283%	
			Public Accident	40.101%	
			Unknown Cause	12.330%	
			Vegetation	4.944%	
Weather	6.978%				
Wildlife	6.355%				
COLD SPRING - H9321320049	COLD SPRING 49	H9321320049	Equipment failure	20.835%	Two outages caused 18.82% customer minutes of interruption. One outage was due to an overhead jumper, the other was an underground cable failure. In both cases, all equipment has been repaired/replaced. No further action necessary. One outage coded as two events caused 20.23% circuit customer minutes of interruption on 5/27/15. All equipment repaired/replaced. No further action necessary. One outage coded as two events caused 32.87% circuit customer minutes of interruption on 8/8/15. All equipment has been repaired/replaced. No further action is necessary.
			Other Cause	3.881%	
			Planned (IEEE)	18.517%	
			Unknown Cause	0.037%	
			Vegetation	21.106%	
			Weather	0.000%	
			Wildlife	35.624%	
CONSTANCE - H9320420041	CONSTANCE 41	H9320420041	Equipment failure	32.837%	One outage coded as two events was responsible for 30.86% circuit customer minutes on 5/1/15 when a span of wire came down in the right of way. All equipment replaced and no further action is necessary. One outage caused by a lightning strike caused 37.714% circuit customer minutes of interruption. All equipment repaired/replaced. No further action necessary. 32.96% circuit customer minutes of interruption due to two outages. Vegetation removed from lines in both outages. No further action necessary.
			Lightning strike	37.714%	
			Other Cause	0.332%	
			Planned (IEEE)	0.425%	
			Public Accident	0.512%	
			Unknown Cause	0.186%	
			Vegetation	23.779%	
Weather	3.869%				
Wildlife	0.342%				
CONSTANCE - H9320420042	CONSTANCE 42	H9320420042	Equipment failure	32.613%	16.5% circuit customer minutes of interruption due to outages caused by underground cable failures. There is currently a program to repair/replace underground cable on this circuit. One outage coded as two events on 8/3/15 caused 40.37% circuit customer minutes of interruption. All equipment replaced. No further action necessary. Planned outages - working on underground cable replacement/repair
			Lightning strike	40.997%	
			Other Cause	4.766%	
			Planned (IEEE)	21.151%	
			Unknown Cause	0.365%	
			Unknown Cause	0.365%	
			Wildlife	0.108%	
CONSTANCE - H9320420044	CONSTANCE 44	H9320420044	Equipment failure	40.994%	One outage caused 35.35% circuit customer minutes of interruption on 10/27/15 when a capacitor bank caught fire. All equipment has been repaired/replaced. No further actions necessary. 47.44% circuit customer minutes of interruption caused by one outage coded as two events on 5/8/15 during a repair to a transmission line at Hebron Station. No further actions necessary.
			Other Cause	53.726%	
			Planned (IEEE)	4.117%	
			Unknown Cause	0.380%	
			Unknown Cause	0.380%	
			Wildlife	0.783%	
			Wildlife	0.783%	
COVINGTON - H9322170041	COVINGTON 41	H9322170041	Equipment failure	79.268%	One outage caused 79.26% circuit customer minutes of interruption when a transmission line insulator cracked on 2/25/15. All equipment has been replaced. No further actions necessary.
			Lightning strike	0.351%	
			Other Cause	0.977%	
			Planned (IEEE)	0.296%	
			Unknown Cause	0.283%	
			Vegetation	0.088%	
			Wildlife	18.737%	
COVINGTON - H9322170042	COVINGTON 42	H9322170042	Equipment failure	87.017%	One outage caused 85.61% circuit customer minutes of interruption when a transmission line insulator cracked on 2/25/15. All equipment has been replaced. No further actions necessary.
			Other Cause	0.616%	
			Planned (IEEE)	6.150%	
			Unknown Cause	0.247%	
			Weather	2.755%	
			Weather	2.755%	
			Wildlife	3.215%	



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COVINGTON - H932170043	COVINGTON 43	H932170043	Equipment failure	64.262%	One outage caused 62.15% circuit customer minutes of interruption when a transmission line insulator cracked on 2/25/15. All equipment has been replaced. No further actions necessary.	
			Other Cause	0.661%		
			Planned (IEEE)	2.285%		
			Unknown Cause	0.672%		
			Vegetation	31.293%		
Wildlife	0.827%	One outage on 4/21/15 caused 31.29% circuit customer minutes of interruption when a tree branch fell across the line. Branch was removed and no repairs were needed. No further action necessary.				
CRESCENT - H932070041	CRESCENT 41	H932070041	Equipment failure	5.083%	Planned outages - working on underground cable replacement/repair	
			Other Cause	11.044%		
			Planned (IEEE)	31.108%		
			Unknown Cause	7.934%		
			Vegetation	44.646%		One outage on 5/7/15 coded as 4 events caused 44.646% of circuit customer minutes of interruption when a tree 45' from the pole line fell into the line. All equipment repaired, no further action is necessary.
Wildlife	0.195%					
CRESCENT - H932070043	CRESCENT 43	H932070043	Equipment failure	21.580%	17.62% circuit customer minutes due to one outage on 6/21 when a recloser failed. Recloser removed from service. No further action necessary.	
			Other Cause	11.532%		
			Planned (IEEE)	0.723%		
			Public Accident	24.965%		One outage coded as 6 events caused 24.96% circuit customer minutes when a vehicle hit a pole on 12/31/15 causing the pole to break. All equipment repaired/replaced. No further actions necessary.
			Unknown Cause	5.594%		
Vegetation	34.732%	One outage coded as two events on 6/21/15 caused 34.71% circuit customer minutes of interruption when a tree 40' from the pole line fell across the line breaking three poles. All equipment has been repaired/replaced. No further action necessary.				
Wildlife	0.874%					
CRITTENDEN - H9321240041	CRITTENDEN 41	H9321240041	Equipment failure	2.365%	One outage coded as three events on 4/17/15, when a vehicle hit a pole, caused 46.44% circuit customer minutes of interruption. All equipment has been repaired/replaced. No further action necessary.	
			Lightning strike	0.568%		
			Other Cause	3.965%		
			Planned (IEEE)	0.154%		
			Public Accident	46.521%		
Unknown Cause	0.119%					
Vegetation	16.737%					
Weather	0.333%					
Wildlife	29.238%	Two outages caused by wildlife were responsible for 22.75% circuit customer minutes of interruption. Wildlife removed and damaged equipment replaced. No further action necessary.				
CRITTENDEN - H9321240042	CRITTENDEN 42	H9321240042	Equipment failure	66.362%	One outage coded as two events caused 61.03% circuit customer minutes when a cable failed just outside Crittenden Station on 10/5/15. The line has been repaired. No further action necessary.	
			Lightning strike	0.253%		
			Other Cause	0.552%		
			Planned (IEEE)	0.104%		
			Public Accident	0.029%		
Unknown Cause	0.484%					
Vegetation	0.213%					
Weather	31.893%	One outage coded as 4 events caused 31.48% circuit customer minutes on 12/23/15 when excessive straight line winds blew the roof off a barn and the debris landed into a transmission line and Crittenden 42. Debris has been cleared and no repairs needed. No further action necessary.				
Wildlife	0.110%					
DAYTON - H9320760041	DAYTON 41	H9320760041	Equipment failure	0.250%	One outage on 8/3/15 caused 88.698% circuit customer minutes of interruption. All equipment repaired. No further action necessary.	
			Lightning strike	88.698%		
			Other Cause	0.166%		
			Unknown Cause	8.018%		
			Vegetation	1.228%		
Wildlife	1.640%					
DAYTON - H9320760042	DAYTON 42	H9320760042	Equipment failure	5.721%	One outage on 2/14/15 caused 48.06% circuit customer minutes of interruption. All equipment has been reset, no further actions necessary.	
			Other Cause	65.626%		
			Planned (IEEE)	3.010%		
			Public Accident	1.342%		
			Unknown Cause	3.299%		
Vegetation	1.759%					
Wildlife	19.243%	One outage caused 18.93% circuit customer minutes of interruption. Wildlife removed. No further action necessary.				
DAYTON - H9320760043	DAYTON 43	H9320760043	Equipment failure	3.919%	One outage on 9/5/15 due to weather (40mph winds during a thunderstorm) caused 78.662% circuit customer minutes of interruption. All damaged equipment replaced. No further action necessary.	
			Lightning strike	11.569%		
			Other Cause	0.893%		
			Planned (IEEE)	2.053%		
			Public Accident	0.101%		
Unknown Cause	2.244%					
Vegetation	0.290%					
Weather	78.662%					
Wildlife	0.270%					
DECORSEY - H9322990041	DECORSEY 41	H9322990041	Equipment failure	50.033%	One outage coded as five events on 7/6/15 caused 43.88% circuit customer minutes of interruption when a recloser experienced a communications issue. No further actions necessary.	
			Lightning strike	0.019%		
			Other Cause	0.131%		
			Planned (IEEE)	1.624%		
			Public Accident	1.824%		
Unknown Cause	1.656%					
Vegetation	0.071%					
Weather	44.388%	One outage coded as six events on 7/29/15 during a severe thunderstorm caused 41.09% circuit customer minutes of interruption. All equipment repaired/reset. No further actions necessary.				
Wildlife	0.255%					
DIXIE - H9320890041	DIXIE 41	H9320890041	Equipment failure	91.043%	Two outages, which each interrupted one customer, caused 91.04% circuit customer minutes of interruption. All equipment repaired/replaced. No further action necessary.	
			Lightning strike	8.957%		
DIXIE - H9320890042	DIXIE 42	H9320890042	Planned (IEEE)	88.462%	Planned outage requested by customer	
			Unknown Cause	11.538%		One outage on 1/19/15 caused 11.538% circuit customer minutes of interruption. Fuse replaced. This was the only unplanned/non-requested outage on this circuit. No further action necessary.

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DRY RIDGE - H9321090041	DRY RIDGE 41	H9321090041	Equipment failure	0.794%	One outage on 12/23/15 during heavy thunderstorms and 35 mph winds caused a line to come down. This one outage caused 89.871% circuit customer minutes of interruption. The line was repaired, no further actions necessary.
			Lightning strike	0.211%	
			Other Cause	0.800%	
			Planned (IEEE)	4.193%	
			Unknown Cause	0.095%	
			Vegetation	4.036%	
Weather	89.871%				
DRY RIDGE - H9321090042	DRY RIDGE 42	H9321090042	Equipment failure	0.931%	One outage on 12/23/15 during heavy thunderstorms and 35 mph winds caused a line to come down. This one outage caused 88.307% circuit customer minutes of interruption. The line was repaired, no further actions necessary.
			Other Cause	0.236%	
			Planned (IEEE)	10.526%	
			Weather	88.307%	
			Weather	88.307%	
FLORENCE - H9322410043	FLORENCE 43	H9322410043	Equipment failure	100.000%	One outage caused by a broken fuse holder caused 100% circuit customer minutes of interruption. All equipment replaced. No further actions necessary.
FLORENCE - H9322410044	FLORENCE 44	H9322410044	Equipment failure	36.221%	One outage on 4/19/15 caused 22.97% circuit customer minutes of interruption. The fuse was replaced at the time of the outage. A program has been started to retrofit all transformers and install animal guards on this line.  One outage on 2/23/15 due to a vehicular accident caused 23.91% circuit customer minutes of interruption. Pole was replaced, no further actions necessary.
			Lightning strike	1.456%	
			Other Cause	8.209%	
			Planned (IEEE)	0.872%	
			Public Accident	29.677%	
			Unknown Cause	0.098%	
			Vegetation	11.350%	
Wildlife	12.117%				
FLORENCE - H9322410046	FLORENCE 46	H9322410046	Equipment failure	95.047%	One outage on 2/4/15 coded as five events caused 94.28% circuit customer minutes of interruption when a fault occurred during a switching operation. The affected section of cable has been replaced. No further actions necessary.
			Other Cause	0.208%	
			Planned (IEEE)	3.679%	
			Unknown Cause	1.066%	
			Weather	1.066%	
GRANT - H9321610041	GRANT 41	H9321610041	Weather	67.782%	One outage on 12/23/15 during heavy thunderstorms caused 67.782% circuit customer minutes of interruption. Cable was replaced and no further action is necessary.  One outage on 12/23/15 during heavy thunderstorms caused 31.88% circuit customer minutes of interruption due to one outage caused by wildlife. Wildlife removed, no further action necessary.
			Wildlife	32.218%	
			Wildlife	32.218%	
HANDS - H9321280042	HANDS 42	H9321280042	Unknown Cause	1.413%	One outage coded as two events on 7/19/15 caused 81.06% circuit customer minutes of interruption. Equipment repaired and tree trimmed. No further action necessary.
			Vegetation	98.587%	
HANDS - H9321280045	HANDS 45	H9321280045	Equipment failure	11.678%	Planned outages - working on underground cable replacement/repair  One outage, due to a dig-in on 8/20/15, coded as two events caused 26.32% circuit customer minutes of interruption. All equipment repaired/replaced. No further action necessary.
			Lightning strike	18.428%	
			Planned (IEEE)	43.477%	
			Public Accident	26.416%	
HEBRON - H9321520044	HEBRON 44	H9321520044	Loss of transmission/generation	100.000%	100% circuit customer minutes of interruption caused by one outage on 5/8/15 during a repair to a transmission line at Hebron Station. No further actions necessary.
HEBRON - H9321520045	HEBRON 45	H9321520045	Equipment failure	28.988%	One outage coded as two events on 8/24/15, due to a defective underground cable, caused 27.85% circuit customer minutes of interruption. Cable replaced. No further action necessary.  One outage on 8/3/15 coded as two events caused 21.848% circuit customer minutes when a pole was struck by lightning. All equipment repaired and pole replaced. No further action necessary.  42.888% circuit customer minutes of interruption caused by one outage on 5/8/15 during a repair to a transmission line at Hebron Station. No further actions necessary.
			Lightning strike	21.848%	
			Loss of transmission/generation	42.888%	
			Planned (IEEE)	0.388%	
			Unknown Cause	0.243%	
			Vegetation	5.645%	
KENTON - H9320090042	KENTON 42	H9320090042	Equipment failure	1.034%	One outage on 10/29/15 caused 29.55% circuit customer minutes of interruption. Vegetation no longer on line. No further action necessary.  One outage on 4/12/15, caused by a squirrel on a transformer, caused 66.70% circuit customer minutes of interruption. All equipment repaired. No further actions necessary.
			Other Cause	0.574%	
			Unknown Cause	0.241%	
			Vegetation	31.314%	
			Wildlife	66.837%	
KENTON - H9320090044	KENTON 44	H9320090044	Equipment failure	1.008%	One outage on 4/3/15, due to a dead tree 20' and up-hill from pole line which fell across the line and broke the conductor, caused 27.42% circuit customer minutes of interruption. A fuse was replaced and the conductor repaired. No further actions necessary.  One outage on 6/27/15 caused 27.73% circuit customer minutes of interruption. While this feeder is on a self-healing team, the self-healing was disabled due to planned work. No further actions necessary.
			Other Cause	5.251%	
			Planned (IEEE)	9.365%	
			Public Accident	4.426%	
			Unknown Cause	4.888%	
			Vegetation	45.275%	
			Weather	28.432%	
Wildlife	1.353%				
KENTON - H9320090045	KENTON 45	H9320090045	Equipment failure	0.405%	One outage on 6/17/15, due to a vehicle hitting a pole, caused 71.33% circuit customer minutes of interruption. All equipment has been repaired/replaced. No further action necessary.
			Lightning strike	0.307%	
			Other Cause	14.559%	
			Planned (IEEE)	2.324%	
			Public Accident	71.327%	
			Unknown Cause	0.522%	
Vegetation	2.064%				
Wildlife	8.492%				
KENTON - H9320090046	KENTON 46	H9320090046	Lightning strike	0.060%	One outage coded as two events caused 63.924% circuit customer minutes when a dead ash tree outside the ROW, broke 30' off the ground and fell across all three conductors. Tree removed. No further actions necessary.  One outage on 11/12/15, which was due to a dead Ash tree outside the ROW falling during 45mph winds, caused 27.195% circuit customer minutes of interruption. All equipment repaired and Ash tree removed. Circuit was inspected and spot trimmed - a full trim will be done in 2017.
			Other Cause	0.105%	
			Planned (IEEE)	8.715%	
			Vegetation	63.924%	
			Weather	27.195%	

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LIMABURG - H9321890041	LIMABURG 41	H9321890041	Equipment failure	97.212%	One outage on 3/15/15, due to an underground cable failure, caused 90.82% circuit customer minutes of interruption. Cable was respliced, no further action necessary.
			Lightning strike	0.024%	
			Other Cause	0.109%	
			Planned (IEEE)	2.345%	
			Unknown Cause	0.310%	
OAKBROOK STA - H9322100041	OAKBROOK 41	H9322100041	Equipment failure	0.916%	Planned outages - working on underground cable replacement/repair
			Other Cause	0.520%	
			Planned (IEEE)	50.960%	
			Public Accident	0.092%	
			Unknown Cause	12.821%	
OAKBROOK STA - H9322100042	OAKBROOK 42	H9322100042	Equipment failure	28.330%	8 outages coded as 15 events. All outages were related to underground cable failures. There is currently a program underway to replace cable on this circuit.
			Other Cause	0.087%	
			Planned (IEEE)	46.903%	
			Public Accident	0.011%	
			Unknown Cause	1.456%	
RICHWOOD - H9321990042	RICHWOOD 42	H9321990042	Equipment failure	5.779%	Planned outages on transformers
			Lightning strike	1.269%	
			Other Cause	0.589%	
			Planned (IEEE)	23.688%	
			Public Accident	65.843%	
RICHWOOD - H9321990043	RICHWOOD 43	H9321990043	Equipment failure	25.602%	One outage on 8/18/15 caused 21.21% circuit customer minutes of interruption. Outage caused by a pad mounted transformer which appears to have been hit with something. Transformer replaced, no further action necessary.
			Lightning strike	2.520%	
			Other Cause	0.581%	
			Planned (IEEE)	4.029%	
			Unknown Cause	0.140%	
THOMAS MORE - H9321340041	THOMAS MORE 41	H9321340041	Equipment failure	100.000%	100% circuit customer minutes of interruption caused by one outage on 5/5/15 due to a transmission line failure.
			Lightning strike		
			Other Cause		
			Planned (IEEE)		
			Unknown Cause		
THOMAS MORE - H9321340042	THOMAS MORE 42	H9321340042	Equipment failure	96.993%	One outage coded as three events caused 96.993% circuit customer minutes of interruption and was due to a transmission line failure on 5/5/15.
			Other Cause	0.075%	
			Unknown Cause	0.030%	
			Wildlife	2.902%	
			Public Accident		
VERONA - H9321250042	VERONA 42	H9321250042	Equipment failure	3.110%	One outage on 12/22/15 caused 92.277% circuit customer minutes of interruption. Pole replaced. No further action necessary.
			Lightning strike	2.366%	
			Other Cause	0.413%	
			Planned (IEEE)	0.851%	
			Public Accident	92.277%	
VILLA - H9322430041	VILLA 41	H9322430041	Equipment failure	8.798%	One outage on 9/24/15 due to human error during switching caused 40.78% circuit customer minutes of interruption. No further action necessary.
			Lightning strike	0.998%	
			Other Cause	47.154%	
			Planned (IEEE)	2.575%	
			Public Accident	2.015%	
VILLA - H9322430042	VILLA 42	H9322430042	Equipment failure	85.228%	One outage caused 68.79% circuit customer minutes of interruption on 9/24/15 due to a faulty switch. Switch replaced. No further actions necessary.
			Other Cause	4.657%	
			Planned (IEEE)	0.505%	
			Wildlife	9.611%	
			Public Accident		
WHITE TOWER - H9323040041	WHITE TOWER 41	H9323040041	Equipment failure	0.599%	One outage coded as 8 events caused 46.08% circuit customer minutes of interruption on 7/18/15. All equipment repaired/replaced. No further action necessary.
			Lightning strike	0.262%	
			Other Cause	1.263%	
			Planned (IEEE)	0.690%	
			Public Accident	54.677%	
WILDER - H9320590040	WILDER 40	H9320590040	Equipment failure	2.184%	Two outages due to vegetation caused 24.82% circuit customer minutes of interruption. Due to the outages, a spot-trim was completed on this circuit to remove trees in danger of landing on the lines. No further action necessary.
			Lightning strike	97.335%	
			Other Cause	0.271%	
			Unknown Cause	0.113%	
			Wildlife	0.097%	

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WILDER - H9320590041	WILDER 41	H9320590041	Equipment failure	5.565%	One outage coded as two events caused 86.821% circuit customer minutes of interruption when a pole was struck by lightning and caught fire on 4/3/15. Pole was carrying Wilder 40 and Wilder 41. Pole and all equipment replaced. No further action necessary.
			Lightning strike	86.821%	
			Other Cause	0.355%	
			Planned (IEEE)	0.125%	
			Unknown Cause	0.162%	
			Vegetation	6.972%	
YORK - H9320770042	YORK 42	H9320770042	Equipment failure	0.424%	One outage due to lightning on 7/19/15 caused 40.333% circuit customer minutes. Equipment replaced. No further action necessary.
			Lightning strike	40.333%	
			Other Cause	15.536%	
			Planned (IEEE)	32.470%	
			Public Accident	0.556%	
			Unknown Cause	8.820%	
Wildlife	1.862%				
YORK - H9320770043	YORK 43	H9320770043	Equipment failure	30.368%	One outage on 8/20/15 caused 30.31% circuit customer minutes of interruption. All equipment repaired. No further action necessary.
			Other Cause	1.595%	
			Planned (IEEE)	43.152%	
			Public Accident	0.311%	
			Unknown Cause	18.917%	
			Vegetation	0.508%	
Wildlife	5.149%				

## 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

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

### Single Phase and Two Phase Primary lines

- 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. In 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.