



LICKING VALLEY
RURAL ELECTRIC COOPERATIVE CORPORATION
P. O. Box 605 • 271 Main Street
West Liberty, KY 41472-0605
(606) 743-3179



February 15, 2017

RECEIVED

FEB 16 2017

Public Service
Commission

Director of Engineering
Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602

Dear Sir:

Enclosed you will find Licking Valley Rural Electric Cooperative Corporation's Electric Distribution Utility Annual Reliability Report for the year ending 2016.

If additional information is needed, please let us know.

Sincerely,

Chris Murphy
Superintendent of Operations

CM:oh

Report prepared for:

LICKING VALLEY RURAL ELECTRIC COOPERATIVE CORPORATION

Prepared by:

Oneida Haney, Service Office Supervisor

ohaney@lvrecc.com

606-743-7500

Major Event Days

T'Med SAIDI Value 78.4108

First Date Used to Determine T'Med-----January 23, 2016

Last Date Used to Determine T'Med-----December 28, 2016

Number of MED in Report Year-----60

System Reliability Information and Results

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Public Service
Commission

System-Wide Information

Total Consumers 17,299 Total Circuits 36

System-Wide Results

Excluding MED

5 Year Average	Reporting Year
SAIDI 165.1270	129.5736
SAIFI 1.4715	1.1743

Including MED

5 Year Average	Reporting Year
SAIDI 366.5847	207.9844
SAIFI 2.1159	1.6367

Ten Worst Performing Circuits and Major Outage Category Without T'Med for SAIFI Index

Substation	Circuit	SAIFI Value	Major Cause
Helechawa	Vancleve	4.0664	Pre-Arranged Maintenance
Campton	Vortex	3.9019	Right-of-Way (Outside)
Campton	Elkins Road	3.1760	Right-of-Way (Outside)
Index	Mize	2.7332	Unknown
Sublett	Lakeville	1.9942	Right-of-Way (Outside)
Oakdale	Elkatawa	1.5467	Right-of-Way (Inside)
Sublett	Gunlock	1.4918	Right-of-Way (Inside)
Zachariah	Leeco	1.4888	Pre-Arranged Maintenance
Oakdale	Highland	1.4552	Consumer Caused
Hot Mix	519	1.3728	Line Down

Ten Worst Performing Circuits and Major Outage Category Without T'Med for SAIDI Index

Substation	Circuit	SAIDI Value	Major Cause
Campton	Vortex	557.3380	Right-of-Way (Outside)
Helechawa	Vancleve	451.8839	Pre-Arranged Maintenance
Sublett	Lakeville	351.2470	Right-of-Way (Outside)
Sublett	Gunlock	333.3587	Right-of-Way (Inside)
Oakdale	Athol	276.7094	Consumer Caused
Campton	Elkins Road	220.0352	Right-of-Way (Outside)
Zachariah	Leeco	192.5083	Pre-Arranged Maintenance
Oakdale	Highland	161.4179	Right-of-Way (Outside)
Index	Mize	159.5184	Unknown
Hot Mix	519	136.3018	Line Down

Ten Worst Performing Circuits and Major Cause Category Without T'Med for CAIDI Value

Substation	Circuit	CAIDI Value	Major Cause
Oakdale	Athol	226.40	Consumer Caused
Sublett	Gunlock	223.46	Right-of-Way (Inside)
Sublett	Lakeville	176.13	Equipment Failure
Campton	Vortex	142.84	Right-of-Way (Outside)
Index	Prison	142.50	Equipment Failure
Zachariah	Leeco	129.30	Right-of-Way (Outside)
Maggard	Rockhouse	121.19	Equipment Failure
Sublett	Gun creek	120.96	Equipment Failure
Campton	Pine Ridge	111.33	Right-of-Way (Outside)
Helechawa	Vancleve	111.13	Consumer Caused

System Wide SAIFI, SAIDI, and CAIDI for the past 5 years, Includes T'Med

	2012	2013	2014	2015	2016
SAIFI	2.2398	2.3190	2.0962	2.2879	1.6367
SAIDI	490.9594	346.9492	352.2147	434.8157	207.9844
CAIDI	219.20	149.61	168.02	190.05	127.07

System Wide SAIFI, SAIDI, and CAIDI for the past 5 years, Excludes T'Med

	2012	2013	2014	2015	2016
SAIFI	1.6488	1.4116	1.4337	1.6890	1.1743
SAIDI	186.9552	159.7084	145.9436	203.4541	129.5736
CAIDI	113.39	113.14	101.80	120.46	110.34

2016 Annual Reliability Report

SAIFI Values for every circuit----excluding MED's

	2012	2013	2014	2015	2016	5 Year Average
Campton Substation						
Pine Ridge Circuit	1.6180	.4929	2.8004	1.0703	.9086	1.3780
Stillwater Circuit	.5427	.8740	.9352	1.8557	.5273	.9470
Vortex Circuit	.9880	5.8529	1.6862	1.5258	3.9019	2.7910
Elkins Road Circuit	.5475	.5366	1.3786	.4539	3.1760	1.2185
Maytown Substation						
Ezel Circuit	.5555	1.1263	.6817	1.3606	.5829	.8614
Hazel Green Circuit	.7381	.3044	.7250	.5722	.5727	.5825
Pomeroyton Circuit	1.1541	.6180	2.2359	.7363	1.1783	1.1845
Zachariah Substation						
Leeco Circuit	.6701	.9186	1.3181	1.2010	1.4888	1.1193
Pine Ridge Circuit	2.5173	.4538	3.0835	.5303	.7266	1.4623
Crockett Substation						
Lenox Circuit	.3114	3.8022	.3943	1.5215	.4784	.7016
Williams Creek Circuit	.6546	1.5514	1.4069	1.1608	.4027	1.0353
Crockett Circuit	3.5548	.5584	1.0932	2.1979	1.0000	1.6809
Helechawa Substation						
Hazel Green Circuit	2.3531	3.2814	2.5088	.7192	.5908	1.8907
Cannel City Circuit	1.4310	2.6988	.7062	1.2483	.5183	1.3205
Vancleve Circuit					4.0664	
Belknap Circuit					1.2206	
Maggard Substation						
Rockhouse Circuit	.2056	.4392	.2137	.6735	.5629	.4190
Flat Fork Circuit	.9032	1.0109	.5097	.4614	.7076	.7186
Lick Creek Circuit	1.3462	2.2354	.7139	.9790	.3612	1.1271
Sublett Substation						
Carver Circuit	1.0022	.4014	.8004	.8995	.2604	.6728
Lakeville Circuit	1.8702	2.2320	.7332	1.3910	1.9942	1.6441
Gunlock Circuit	1.1279	1.8941	.9689	3.6553	1.4918	1.8276
Gun Creek Circuit	15.6993	1.0821	.6415	4.8953	.5595	4.5755

SAIFI Values for every circuit----excluding MED's

	2012	2013	2014	2015	2016	5 Year Average
Hot Mix Substation						
Elkfork Circuit	3.8937	2.2973	1.4415	3.6804	1.176 1	2.4978
Liberty Road Circuit	.1757	2.8494	2.2054	.9178	.0563	1.2409
519 Circuit	1.2721	.7391	.7000	1.1219	1.372 8	1.0412
Wrigley Circuit	2.6885	.7105	.2411	1.1617	.3063	1.0216
Oakdale Substation						
Athol Circuit	.2782	2.9824	.6000	4.3652	1.222 2	1.8896
Highland Circuit	.6539	.2245	7.6267	12.6854	1.455 2	4.5291
Elkatawa Circuit	.2000	2.6718	.9886	1.3736	1.546 7	1.3561
War Creek Circuit	2.8906	.5990	1.2550	.9173	.9779	1.3280
Index Substation						
Caney Circuit	.7259	.6411	.7513	.8947	.7251	.7476
Index Circuit	1.1794	.1522	.2092	.2229	.8492	.5226
Mize Circuit	2.0530	2.1503	4.9844	3.7369	2.733 2	3.1316
Prison Circuit		2.5000				
School Circuit				.1666	.5000	

SAIDI Values for every circuit---excluding MED's

	2012	2013	2014	2015	2016	5 Year Average
Campton Substation						
Pine Ridge Circuit	164.7603	62.6224	94.1814	56.8558	101.1563	95.9152
Stillwater Circuit	241.2174	88.4797	112.6524	208.8360	44.5341	139.1439
Vortex Circuit	60.5624	551.1349	174.9289	293.2477	557.3380	327.4424
Elkins Road	62.5182	98.9338	178.0000	51.7021	220.0352	122.2379
Maytown Substation						
Ezel Circuit	89.3542	113.1528	84.9183	117.0970	54.1790	91.7403
Hazel Green Circuit	50.2346	32.7014	133.8972	76.3127	35.3710	65.7034
Pomeroyton Circuit	128.9309	74.0625	242.1235	53.5035	58.8554	111.4952
Zachariah Substation						
Leeco Circuit	177.5446	79.2519	110.4974	172.1195	192.5083	146.3843
Pine Ridge Circuit	346.0199	50.0656	261.3724	52.2862	76.9220	157.3332
Crockett Substation						
Lenox Circuit	165.7377	32.3295	32.2571	94.0735	40.7669	73.0329
Williams Creek Circuit	60.0990	217.3212	86.2045	52.6992	42.6087	91.7865
Crockett Circuit	422.1698	54.2185	136.4512	99.1437	47.5911	151.9149
Helechawa Substation						
Hazel Green Circuit	161.1261	209.9984	222.6618	64.6960	60.6123	143.8189
Cannel City Circuit	209.7148	655.3190	82.2362	154.0432	54.2373	231.1101
Vancleve Circuit					451.8839	
Belknap Circuit					129.5499	
Maggard Substation						
Rockhouse Circuit	19.8257	37.9821	69.9310	71.1169	68.2167	53.4145
Flat Fork Circuit	123.4014	127.7220	91.7345	42.4448	66.1081	90.2822
Lick Creek Circuit	108.6779	213.6774	78.1350	104.1343	29.7822	106.8814
Sublett Substation						
Carver Circuit	74.6174	51.3213	60.1401	107.0751	18.5645	62.3437
Lakeville Circuit	150.7639	181.0622	87.5054	132.8783	351.2470	180.6914
Gunlock Circuit	177.2093	149.5475	125.5344	652.1632	333.3587	287.5626
Gun Creek Circuit	984.5399	95.6327	71.9811	866.0755	67.6786	417.1816

SAIDI Values for every circuit---excluding MED's

	2012	2013	2014	2015	2016	5 Year Average
Hot Mix Substation						
Elkfork Circuit	368.0402	159.0446	65.5471	193.2707	120.6654	181.3136
Liberty Road Circuit	10.1352	238.7671	197.3288	48.3698	3.3803	99.5962
519 Circuit	192.3217	53.2608	51.8047	102.9759	136.3018	107.3330
Wrigley Circuit	125.6658	51.8837	28.4171	108.7686	27.5443	68.4559
Oakdale Substation						
Athol Circuit	63.4782	275.5752	69.3912	696.5217	276.7094	276.3351
Highland Circuit	99.7991	39.0838	1051.1060	2135.8053	161.4179	697.4424
Elkatawa Circuit	156.5783	473.4478	159.7356	136.7890	128.9409	211.0983
War Creek Circuit	607.1733	59.5848	130.8586	74.5614	77.6871	189.9730
Index Substation						
Caney Circuit	35.0763	48.9058	62.7513	70.4868	72.6010	57.9642
Index Circuit	105.5734	10.2208	20.8154	11.7956	68.9507	43.4712
Mize Circuit	203.9666	249.1704	412.1109	352.2212	159.5184	275.3975
Prison Circuit		375.0000			71.2500	
School Circuit					30.0000	

Circuit Reporting

Circuits With SAIFI or SAIDI Value Higher Than 5 Year Average

Circuit Reporting

Circuit # 1

Substation # 7, Campton Substation, located on Rt 15 in Campton, Wolfe County.

Circuit # 1, Pine Ridge Circuit: this circuit serves the areas of Campton, Old Rt 15, Pine Ridge, and part of Quillen Chappel.

This circuit has approximately 29.9 miles of line and serves approximately 832 consumers.

This circuit was cut our in 2015.

Causes and percentages for this circuit:

Causes	% SAIFI	% SAIDI
Equipment Failure	80%	88%
Pre-Arranged Maintenance	9%	5%
Unknown	5%	3%
Animals	4%	1%
Consumer Caused	1%	1%
Right-of-Way (Outside)	<1%	1%
Right-of-Way (Inside)	<1%	<1%

Circuit 5 Year Average SAIFI----1.3780

Reporting Year 2016 SAIFI---.9086

Circuit 5 Year Average SAIDI---95.9152

Reporting Year 2016 SAIDI---101.1563

Equipment Failure is something you have no control over, not knowing the reason it failed.

Circuit Reporting

Circuit # 2

Substation # 7, Campton Substation, located on Rt. 15 in Campton, Wolfe County.

Circuit # 3, Vortex Circuit; this circuit serves areas of Hwy 15, Flat Mary, Big Bloody and Bethany.

This circuit has approximately 83 miles of line and serves approximately 571 consumers.

This circuit was cut out in 2015.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Right-of-Way (Outside)	34%	50%
Right-of-Way (Inside)	26%	30%
Pre-Arranged Maintenance	22%	7%
Consumer Caused	15%	11%
Equipment Failure	2%	1%
Animals	1%	1%
Unknown	<1%	<1%

Circuit 5 Year Average SAIFI—2.7910

Reporting Year 2016 SAIFI—3.9019

Circuit 5 Year Average SAIDI—327.4424

Reporting Year 2016 SAIDI—557.3380

Right-of-Way problems that are outside of right-of-way easement are hard to control. We will try to educate our consumers on what they need to take care of in this area to prevent power outages.

Circuit Reporting

Circuit # 3

Substation # 7, Campton Substation, located on Rt 15 in Campton, Wolfe County.

Circuit # 4, Elkins Road; this circuit serves areas of Sandy Ridge, Mullins Point, Elkins Road and Bear Pen.

This circuit has approximately 34.6 miles of line and serves approximately 142 consumers.

This circuit was cut out in 2015.

Causes and percentages for this circuit:

Causes	% SAIFI	% SAIDI
Right-of-Way (Outside)	94%	91%
Pre-Arranged Maintenance	3%	5%
Equipment Failure	2%	3%
Unknown	<1%	<1%
Animals	<1%	<1%

Circuit 5 Year Average SAIFI---1.2185

Reporting Year 2016 SAIFI—3.1760

Circuit 5 Year Average SAIDI—122.2379

Reporting Year 2016 SAIDI—220.0352

Right-of-Way problems that are outside of our right-of-way easement are hard to control. We will try to educate our consumers on what they need to take care of in this area to prevent power outages.

Circuit Reporting

Circuit # 4

Substation # 5, Maggard Substation, located on Rt 1081, Coon Creek in Magoffin County.

Circuit # 1, Rockhouse Circuit; this circuit serves areas of Improvement Fork, Rockhouse and Logville of Magoffin County.

This Circuit has approximately 32.4 miles and serves approximately 286 consumers.

Last circuit trim was in 2013.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Equipment Failure	32%	54%
Unknown	21%	22%
Right-of-Way (Outside)	19%	14%
Line Down	17%	4%
Pre-Arranged Maintenance	10%	5%
Animals	1%	<1%

Circuit 5 Year Average SAIFI---.4190

Reporting Year 2016 SAIFI--.5629

Circuit 5 Year Average SAIDI—53.4145

Reporting Year 2016 SAIDI—68.2167

Equipment Failure is something beyond our control.

Circuit Reporting

Circuit # 5

Substation # 6, Sublett Substation, located on Rt 7 near Royalton in Magoffin County.

Circuit # 2, Lakeville Circuit; this circuit serves areas of Lakeville, Mason Creek, Salyer Branch, Middle Fork, Fritz and Seitz.

This circuit has approximately 54.8 miles and serves approximately 518 consumers.

Last circuit trim was in 2012.

Causes and percentages for this circuit:

Cause	%SAIFI	%SAIDI
Right-of-Way (Outside)	49%	61%
Pre-Arranged Maintenance	21%	5%
Equipment Failure	15%	21%
Consumer Caused	12%	8%
Right-of-Way(Inside)	3%	4%
Unknown	<1%	<1%

Circuit 5 Year Average SAIFI—1.6441

Reporting Year 2016 SAIFI—1.9942

Circuit 5 Year Average SAIDI—180.6914

Reporting Year 2016 SAIDI—351.2470

Right-of-Way problems that are outside our right-of-way easement are hard to control. We will have to educate our consumers on what they need to take care of to prevent power outages.

Circuit Reporting

Circuit # 6

Substation # 6, Sublett Substation, located on Rt 7 near Royalton in Magoffin County.

Circuit # 3, Gunlock Circuit; this circuit serves areas of Swampton, Puncheon, Big Half Mountain, Trace Fork, Salt Lick, Long Branch and Gypsy.

This circuit has approximately 101.8 miles of line and serves approximately 864 consumers.

Last circuit trim was in 2012.

Causes and percentages for this circuit:

Cause	% SAIFI	%SAIDI
Right-of-Way (Inside)	57%	81%
Pre-Arranged Maintenance	29%	10%
Right-of-Way (Outside)	10%	7%
Unknown	3%	1%
Equipment Failure	<1%	<1%
Animals	<1%	<1%

Circuit 5 Year Average SAIFI—1.8276

Reporting Year 2016 SAIFI—1.4918

Circuit 5 Year Average SAIDI—287.5626

Reporting Year 2016 SAIDI—333.3587

Since the biggest problem was Right-of-Way inside of easement, we are looking to schedule another trim for this circuit.

Circuit Reporting

Circuit # 7

Substation # 1, Zachariah Substation, located on Hwy 1036 at the edge of Wolfe and Lee Counties.

Circuit # 1, Leeco Circuit; this circuit serves areas of Little Sinking, Big Sinking, Leeco, and Big Bend Road.

This circuit has approximately 29.9 miles of line and serves approximately 358 consumers.

This circuit is currently being cut out.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Pre-Arranged Maintenance	78%	59%
Right-of-Way (Outside)	9%	23%
Right-of-Way (Inside)	5%	2%
Equipment Failure	3%	9%
Unknown	2%	4%
Line Down	2%	3%
Animals	<1%	<1%

Circuit 5 Year Average SAIFI—1.1193

Reporting Year 2016 SAIFI—1.4888

Circuit 5 Year Average SAIDI—146.3843

Reporting Year 2016 SAIDI—192.5083

The repairs to this circuit required the power to be turned off in order to complete them safely.

Circuit Reporting

Circuit # 8

Substation # 2, Oakdale Substation, located on Rt 52 at Oakdale in Breathitt County.

Circuit # 1, Athol Circuit; this circuit serves the areas of Athol, Oakdale, and Cope Branch.

This circuit has approximately 17.6 miles of line and serves approximately 117 consumers.

This circuit was cut out in 2016.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Consumer Caused	74%	92%
Right-of-Way (Inside)	18%	5%
Pre-Arranged Maintenance	6%	1%
Equipment Failure	1%	1%
Unknown	1%	<1%

Circuit 5 Year Average SAIFI—1.8896

Reporting Year 2016 SAIFI—1.2222

Circuit 5 Year Average SAIDI—276.3351

Reporting Year 2016 SAIDI—276.7094

We will need to educate our consumers about watching out for power lines when they are working near them.

Circuit Reporting

Circuit # 9

Substation # 2, Oakdale Substation, located on Rt 52 at Oakdale in Breathitt County.

Circuit # 3, Elkatawa Circuit; this circuit serves the areas of Five-Mile, Wolverine, Elkatawa, Belcher Fork, and Cane Creek.

This circuit has approximately 57.3 miles of line and serves approximately 898 consumers.

This circuit was cut out in 2016.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Right-of-Way (Inside)	70%	71%
Pre-Arranged Maintenance	11%	8%
Equipment Failure	9%	10%
Consumer Caused	7%	5%
Right-of-Way (Outside)	1%	3%
Line Down	1%	1%
Unknown	<1%	<1%
Animals	<1%	1%

Circuit 5 Year Average SAIFI—1.3561

Reporting Year 2016 SAIFI—1.5467

Circuit 5 Year Average SAIDI—211.0983

Reporting Year 2016 SAIDI—128.9409

Right-of-Way outages caused before we had the circuit completely cut out. This being completed now should reduce the outages for this circuit next year.

Circuit Reporting

Circuit # 10

Substation # 8, Index Substation, located on Rt 191 at Index in Morgan County.

Circuit # 1, Caney Circuit; this circuit serves areas of Malone, Caney Stacy Fork, and Vance Fork.

This circuit has approximately 36.5 miles of line and serves approximately 371 consumers.

Last hot spot trim was in 2011.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Consumer Caused	42%	44%
Pre-Arranged Maintenance	24%	13%
Right-of-Way (Inside)	17%	19%
Unknown	14%	21%
Equipment Failure	3%	3%

Circuit 5 Year Average SAIFI--.7476

Reporting Year 2016 SAIFI--.7251

Circuit 5 Year Average SAIDI—57.9642

Reporting Year 2016 SAIDI—72.6010

Need to educate consumers more on being aware of the power lines when working near them to reduce power outages.

Circuit Reporting

Circuit # 11

Substation # 8, Index Substation, located on Rt. 191 at Index in Morgan County.

Circuit # 2, Index Circuit; this circuit serves areas of Index and Liberty Road.

This circuit has approximately 21.5 miles of line and serves approximately 325 consumers.

Last hot spot trim was in 2011.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Equipment Failure	67%	54%
Right-of-Way (Inside)	17%	25%
Right-of-Way (Outside)	11%	16%
Unknown	2%	2%
Pre-Arranged Maintenance	2%	<1%
Consumer Caused	<1%	2%

Circuit 5 Year Average SAIFI--.5226

Reporting Year 2016 SAIFI--.8492

Circuit 5 Year Average SAIDI—43.4712

Reporting Year 2016 SAIDI—68.9507

Equipment Failure is something beyond our control.

Circuit Reporting

Circuit # 12

Substation # 4, Hot Mix Substation, located on Sugar Camp Road in Morgan County.

Circuit # 4, 519 Circuit; this circuit serves areas of Hwy 519, Yocum, Blaze, Zag and Dehart.

This circuit has approximately 98.1 miles of line and serves approximately 845 consumers.

Last hot spot trim was in 2013.

Causes and percentages for this circuit:

Cause	% SAIFI	% SAIDI
Line Down	76%	80%
Pre-Arranged Maintenance	18%	11%
Unknown	5%	6%
Right-of-Way (Inside)	<1%	<1%
Equipment Failure	<1%	<1%
Right-of-Way (Outside)	<1%	<1%
Animals	<1%	<1%

Circuit 5 Year Average SAIFI—1.0412

Reporting Year 2016 SAIFI—1.3728

Circuit 5 Year Average SAIDI—107.3330

Reporting Year 2016 SAIDI—136.3018

Will have to more extensive investigation on these Line Down outages to find the reason for the line to be down, in order to determine a true cause.

Vegetation Management Plan Review

Licking Valley Rural Electric Cooperative Corporation has an aggressive vegetation program and has contracted B M C Contracting to address our cooperatives right-of-way requirements. Our Cooperative likes to maintain a sixty foot ground to sky right-of-way clearance on new and existing accounts; however some variety in right-of-way clearing is based on geography/terrain, easement widths, line voltages and property owner issues.

LVRECC is currently working on a five (5) year rotation cycle. Two (2) crews runs bucket trucks and chippers and their main concern are consumer requests and hot spots. In addition to B M C, the cooperative has a bush hog that is used for right-of-way clearing when not in use by construction or maintenance crew. The cooperative has a right-of-way foreman that oversees B M C Contracting crews. B M C also does our Herbicide Treatment, primarily in the months of May through August or September.