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FEDERAL EXPRESS

October 31, 2017

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

M-2016-2522508

Re: PPL Electric Utilities Corporation
Quarterly Reliability Report for the
Period Ended September 30, 2017
Docket No. L-00030161

Dear Ms. Chiavetta:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric") is an original of PPL Electric's Quarterly Reliability Report for the Period Ended September 30, 2017. Also enclosed, in a sealed envelope, is a copy of the report containing competitively sensitive and proprietary information. The Company hereby requests that the Commission treat that information, and the report containing the information, as privileged and confidential. The report is being filed pursuant to 52 Pa. Code § 57.195(d).

Pursuant to 52 Pa. Code § 1.11, the enclosed document is to be deemed filed on October 31, 2017, which is the date it was deposited with an overnight express delivery service as shown on the delivery receipt attached to the mailing envelope.

In addition, please date and time-stamp the enclosed extra copy of this letter and return it to me in the envelope provided.

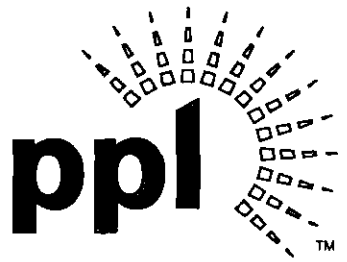
If you have any questions regarding this document, please call me or B. Kathryn Frazier, PPL Electric's Regulatory Affairs Manager at (610) 774-3372.

Very truly yours,

Kimberly A. Klock

Enclosures

cc: Tanya J. McCloskey, Esquire
Mr. Daniel Searfoorce
Mr. John R. Evans



PPL Electric Utilities

PPL Electric Utilities Corporation

Quarterly Reliability Report

to the

Pennsylvania Public Utility Commission

October 2017

*1) **A description of each major event that occurred during the preceding quarter, including the time and duration of the event, the number of customers affected, the cause of the event and any modified procedures adopted in order to avoid or minimize the impact of similar events in the future.***

There were no major events during the third quarter of 2017.

2) ***Rolling 12-month reliability index values (SAIFI, CAIDI, SAIDI, and if available, MAIFI) for the EDC's service territory for the preceding quarter. The report shall include the data used in calculating the indices, namely the average number of customers served, the number of sustained customer interruptions, the number of customers affected, and the customer minutes of interruption. If MAIFI values are provided, the report shall also include the number of customer momentary interruptions.***

The following table provides data for the 12 months ending September 30, 2017.

SAIFI (Benchmark = 0.98; Rolling 12-month Std. = 1.18)	0.74
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	134
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	99
MAIFI[1]	5.3
Average Number of Customers Served[2]	1,414,164
Number of Sustained Customer Interruptions (Trouble Cases)	16,591
Number of Customers Affected[3]	1,041,227
Customer Minutes of Interruptions (CMI)	139,728,550
Number of Customer Momentary Interruptions	7,525,528

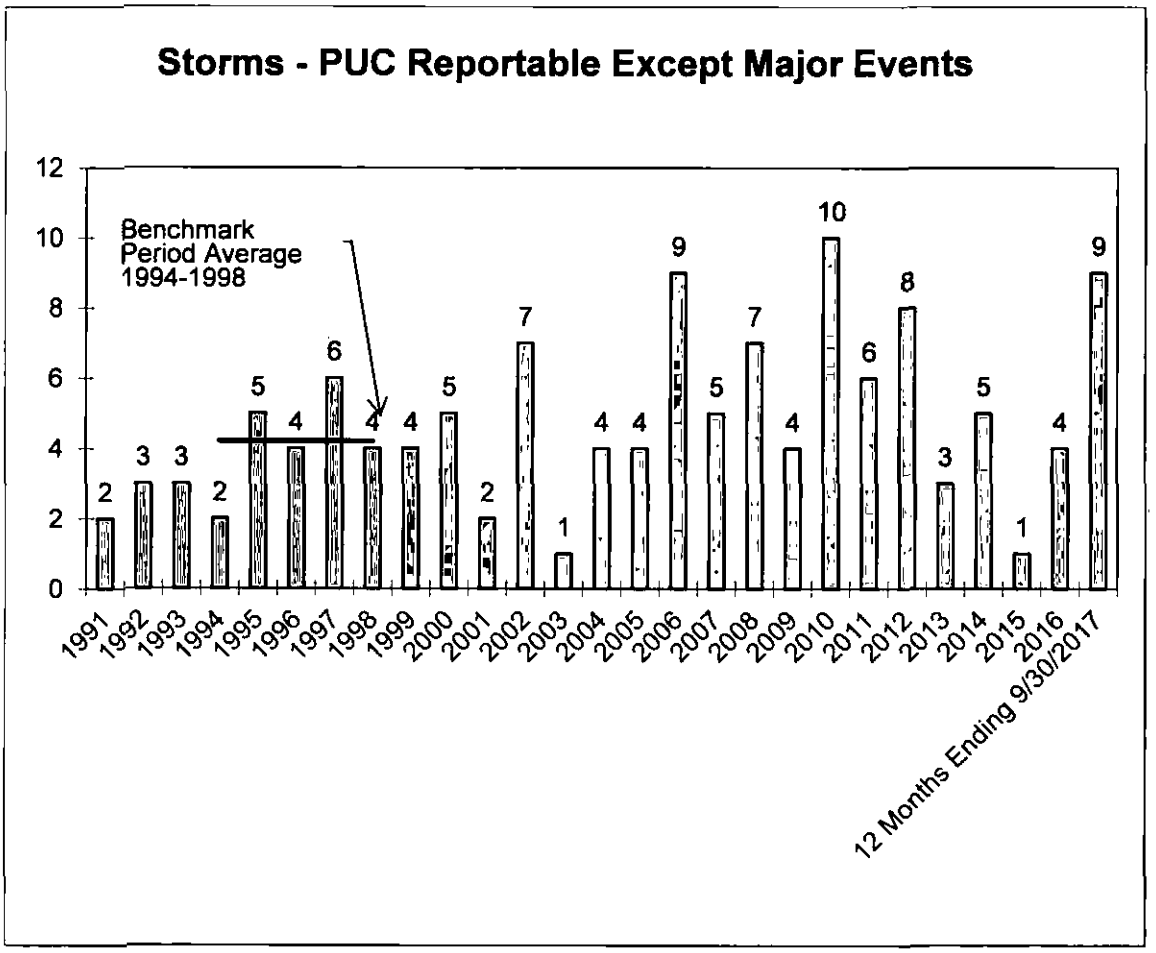
During the third quarter, there were no (0) PUC major events, two (2) PUC reportable events, and nine (9) other storms that required the opening of one or more area emergency centers to manage restoration efforts.

[1] MAIFI data is obtained at the substation breaker level and at certain reclosers. Because PPL Electric is enhancing its ability to identify momentaries, this metric is expected to increase in the near term.

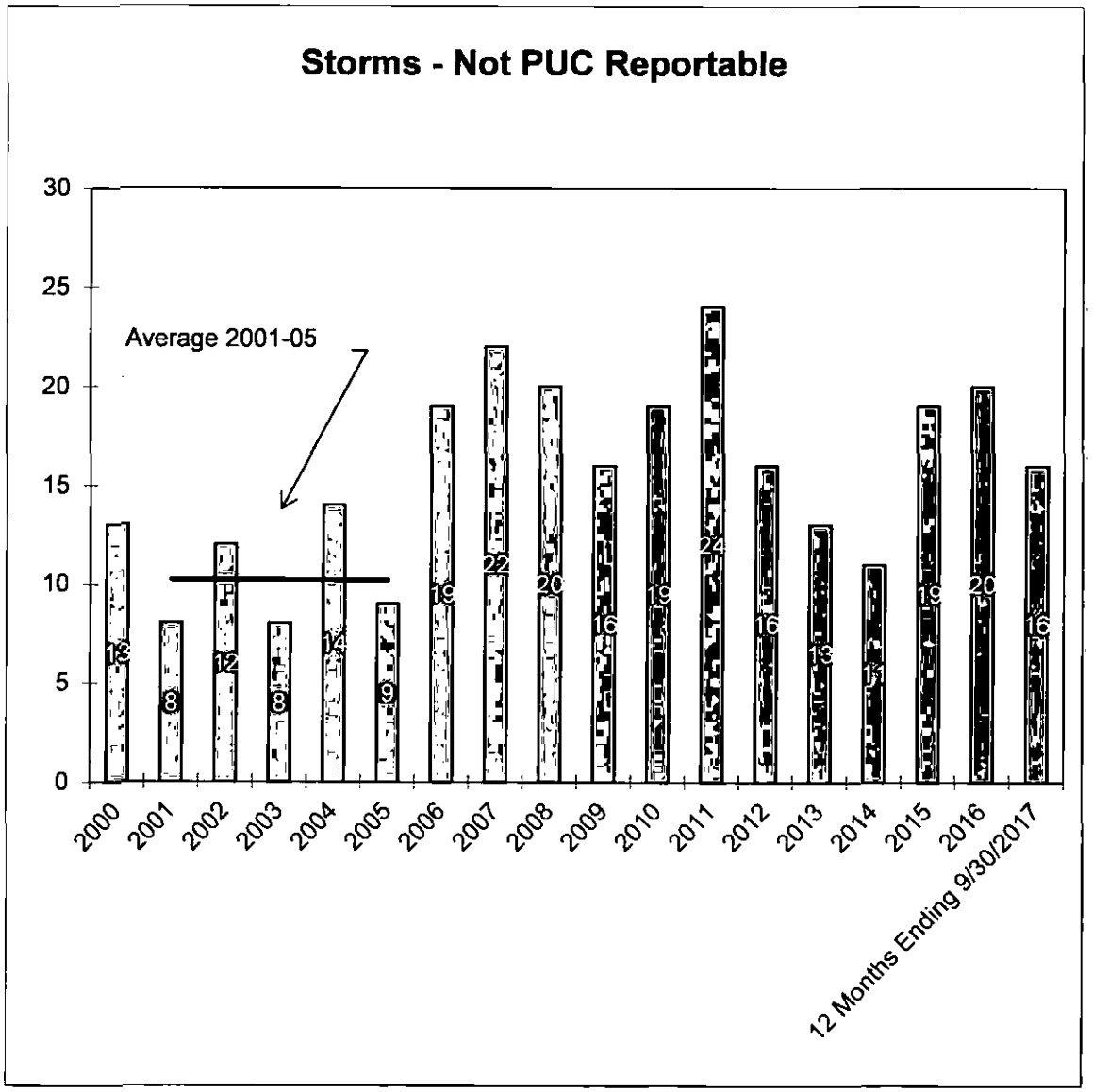
[2] PPL Electric calculates the annual indices using customers served at the end of period. This is consistent with the method used to calculate PPL Electric's benchmarks.

[3] The data reflects the number of customers interrupted for each interruption event summed for all events, also known as customer interruptions. If a customer is affected by three separate cases of trouble, that customer represents three customer interruptions, but only one customer interrupted.

During the 12-month reporting period, there were no (0) PUC major events and nine (9) PUC-reportable storms other than major events.



In addition, there were sixteen (16) storms that were not reportable, but which did require the opening of one or more area emergency centers to manage restoration efforts.



*3) **Rolling 12-month reliability index values (SAIFI, CAIDI, SAIDI, CMI, and if available, MAIFI) and other pertinent information such as customers served, number of interruptions, customer minutes interrupted, number of lockouts, and so forth, for the worst performing 5% of the circuits in the system. An explanation of how the EDC defines its worst performing circuits shall be included.***

The following table provides reliability index values for the worst performing 5% of the circuits in the system for the 12 months ended at the current quarter. An explanation of how PPL Electric defines its worst performing circuits is included in Appendix A.

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
1	46602	1744	681	2.6	15.7	1,455	86	2,538,028
2	28301	996	301	3.3	12.5	2,285	76	2,276,244
3	26604	866	164	5.3	7.9	2,415	75	2,091,275
4	40902	845	677	1.2	23.0	2,317	66	1,957,289
5	42201	1071	315	3.4	7.2	1,725	36	1,847,251
6	26602	2276	432	5.3	5.9	686	23	1,561,003
7	47001	507	432	1.2	14.9	2,491	65	1,263,587
8	42001	692	501	1.4	13.6	1,660	56	1,149,368
9	65802	600	269	2.2	21.4	1,877	36	1,127,130
10	45702	644	458	1.4	27.0	1,725	66	1,111,554
11	54501	1032	468	2.2	3.4	961	10	991,825
12	54101	601	193	3.1	12.9	1,566	49	941,833
13	43108	937	514	1.8	23.9	987	23	924,625
14	24602	580	428	1.4	2.9	1,523	32	883,038
15	46801	771	186	4.1	18.0	1,104	40	850,931
16	28602	427	228	1.9	5.2	1,930	15	824,000
17	26603	733	312	2.4	7.6	1,104	48	809,493
18	67702	896	509	1.8	8.2	866	18	775,820
19	26402	694	219	3.2	21.8	1,078	49	747,602
20	46504	383	226	1.7	2.0	1,928	46	738,113
21	43504	367	349	1.1	1.5	2,004	19	735,101
22	16005	620	309	2.0	11.3	1,135	30	704,011
23	52401	546	193	2.8	14.9	1,285	79	702,120
24	64304	520	274	1.9	14.8	1,349	21	700,912
25	44203	370	119	3.1	4.0	1,875	41	694,307

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
26	46702	541	212	2.5	7.3	1,273	37	688,195
27	40702	657	229	2.9	12.1	1,012	20	665,036
28	43102	670	259	2.6	5.1	986	24	660,823
29	67605	419	459	0.9	21.3	1,577	40	660,740
30	47704	475	131	3.6	5.3	1,378	38	654,367
31	40101	305	188	1.6	19.2	2,124	37	648,504
32	25501	391	258	1.5	15.4	1,655	49	647,007
33	26601	480	332	1.4	4.2	1,325	37	635,575
34	59002	282	166	1.7	12.3	2,254	61	635,306
35	52403	495	149	3.3	12.3	1,245	52	616,119
36	52402	370	162	2.3	17.3	1,648	65	609,803
37	26703	319	281	1.1	4.0	1,898	46	605,878
38	13503	416	322	1.3	22.4	1,454	30	604,642
39	65702	327	355	0.9	20.0	1,814	40	593,593
40	26401	265	303	0.9	29.2	2,178	70	577,096
41	24401	453	149	3.0	23.7	1,263	58	572,502
42	41202	388	571	0.7	4.7	1,459	57	566,285
43	55002	218	148	1.5	12.6	2,551	86	554,971
44	51502	299	163	1.8	8.1	1,846	16	552,439
45	25503	403	514	0.8	12.8	1,367	25	550,850
46	46203	253	267	0.9	7.7	2,159	43	547,105
47	29701	475	314	1.5	3.6	1,143	18	543,225
48	53602	247	98	2.5	29.2	2,189	79	539,927
49	23401	311	159	2.0	9.6	1,721	41	535,981
50	46802	275	299	0.9	11.8	1,945	90	535,247
51	56802	346	114	3.0	30.2	1,528	43	528,378
52	24901	224	149	1.5	9.9	2,273	48	509,877
53	66102	251	126	2.0	24.0	2,005	20	503,737
54	64302	475	867	0.5	7.0	1,060	26	503,443
55	47401	372	142	2.6	11.6	1,349	29	501,761
56	43101	345	207	1.7	8.6	1,452	42	501,544
57	40901	263	249	1.1	23.2	1,898	56	498,321
58	22101	191	181	1.1	4.4	2,610	13	497,649
59	24204	542	763	0.7	2.6	917	5	496,577
60	42701	331	153	2.2	1.0	1,454	54	481,825
61	59202	280	102	2.7	14.2	1,700	62	476,369
62	18502	256	146	1.8	5.4	1,852	65	474,618

4) ***Specific remedial efforts taken and planned for the worst performing 5% of the circuits identified in paragraph (3).***

01 Circuit 46602 -- LARRYS CREEK 66-02

Performance Analysis

The LARRYS CREEK 66-02 circuit experienced four outages of over 100,000 CMI between October 2016 and September 2017.

On April 22, 2017, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 845 customers for up to 348 minutes resulting in 278,593 CMI.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 67 customers for up to 1,820 minutes resulting in 121,898 CMI.

On May 1, 2017, during a period of heavy rain, a tree made contact with a pole or pole arm causing a motor operated switch to be interrupted. This outage affected 312 customers for up to 3,902 minutes resulting in 624,942 CMI.

On August 4, 2017, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 842 customers for up to 1,909 minutes resulting in 1,133,615 CMI.

In total, the LARRYS CREEK 66-02 circuit had 86 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (53); animal contacts (13); equipment failure (10); nothing found (5); vehicles (3); contact or dig in (1); other (1).

Remedial Actions

- In 2016, an Expanded Operational Review was performed on this circuit. As a result, animal guarding was added at a location that had multiple animal outages.
- In 2017, this circuit will receive additional animal guarding.
- In 2017, fusing will be added at one additional location.
- In 2018, two devices with multiple cause-unknown outages will be inspected.
- In 2018, a section of difficult-to-access conductor will be relocated.
- In 2018, construction of a tie line to the JERSEY SHORE 09-01 will be evaluated.
- In 2018, the use of a 4 MW generator will be evaluated as an alternate source for the most isolated tap.

02 Circuit 28301 -- NEWFOUNDLAND 83-01

Performance Analysis

The NEWFOUNDLAND 83-01 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On November 20, 2016, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,858 customers for up to 1,506 minutes resulting in 1,592,438 CMI.

On December 18, 2016, during a period of heavy rain, an equipment failure occurred on a pole or pole arm causing a temporary open point to be interrupted. This outage affected 1,021 customers for up to 356 minutes resulting in 128,399 CMI.

In total, the NEWFOUNDLAND 83-01 circuit had 76 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (50); equipment failure (11); nothing found (6); animal contacts (5); contact or dig in (2); other (1); vehicles (1).

Remedial Actions

- In 2017, full circuit tree trimming was performed.
- In 2017, additional fusing was installed on this circuit.
- In 2017, two vacuum reclosers were converted to triple-single operation.
- In 2017, several additional locations will be animal guarded.
- In 2017, feeder relays will be upgraded at the NEWFOUNDLAND substation.
- In 2017, a section of three-phase conductor will be relocated.
- In 2017, an additional load break switch will be installed.

03 Circuit 26604 -- BROOKSIDE 66-04

Performance Analysis

The BROOKSIDE 66-04 circuit experienced four outages of over 100,000 CMI between October 2016 and September 2017.

On November 19, 2016, during a period of ice/sleet/snow, an equipment failure occurred on an underground conductor causing a recloser to trip to lockout. This outage affected 1,207 customers for up to 432 minutes resulting in 332,934 CMI.

On March 10, 2017, an equipment failure occurred on an overhead switch causing a circuit breaker to trip to lockout. This outage affected 2,432 customers for up to 31 minutes resulting in 282,479 CMI.

On June 19, 2017, a tree made contact with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 2,419 customers for up to 61 minutes resulting in 139,481 CMI.

On July 24, 2017, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,422 customers for up to 977 minutes resulting in 887,484 CMI.

In total, the BROOKSIDE 66-04 circuit had 75 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (35); equipment failure (17); animal contacts (14); nothing found (5); other (2); vehicles (2).

Remedial Actions

- In 2017, an existing three-phase recloser was reprogrammed to single-phase operation.
- In 2017, two fuses will be installed on this circuit.
- In 2017, additional animal guarding locations will be evaluated for this circuit.
- In 2017, voltage automation will be installed on this circuit.
- In 2017, a three phase tie line project between the BROOKSIDE 66-02 and the BROOKSIDE 66-04 will be evaluated.
- In 2018, a section of conductor will be supplied from an alternate source.
- In 2018, a motor operated air break will be replaced with a recloser as part of the Smart Grid Initiative.

04 Circuit 40902 -- JERSEY SHORE 09-02

Performance Analysis

The JERSEY SHORE 09-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,678 customers for up to 3,517 minutes resulting in 1,782,473 CMI.

In total, the JERSEY SHORE 09-02 circuit had 66 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (39); equipment failure (12); animal contacts (7); nothing found (4); other (2); vehicles (2).

Remedial Actions

- In 2017, additional fusing locations are being evaluated for this circuit.
- In 2017, a section of single-phase is being evaluated for splitting into two separate sections.
- In 2017, full circuit tree trimming will be performed.
- In 2017, an Expanded Operational Review will be performed on this circuit.
- In 2017, additional animal guarding will be installed on this circuit.
- In 2017 and 2018, seventeen porcelain cutouts will be replaced.
- In 2018, an additional Smart Grid recloser will be added to this circuit.
- In 2018, a project to move a section of this circuit to another source will be evaluated.
- In 2018, an additional single phase recloser will be evaluated for this circuit.

05 Circuit 42201 -- SHENANDOAH 22-01

Performance Analysis

The SHENANDOAH 22-01 circuit experienced three outages of over 100,000 CMI between October 2016 and September 2017.

On January 23, 2017, during a period of strong wind, an equipment failure occurred on a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,730 customers for up to 536 minutes resulting in 471,587 CMI.

On May 31, 2017, during a period of heavy rain, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,723 customers for up to 654 minutes resulting in 752,188 CMI.

On August 5, 2017, during a period of heavy rain, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,022 customers for up to 456 minutes resulting in 465,694 CMI.

In total, the SHENANDOAH 22-01 circuit had 36 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (15); equipment failure (10); animal contacts (4); nothing found (3); vehicles (3); other (1).

Remedial Actions

- In 2017, a hydraulic circuit recloser was replaced.
- In 2017, an Expanded Operational Review was performed.
- In 2017, a targeted circuit line patrol was performed. As a result, several remedial actions were completed, including additional hot spot tree trimming.
- In 2017, full circuit tree trimming was performed.
- In 2017, an existing hydraulic recloser was upgraded to a Smart Grid device, and a new hydraulic recloser was installed.
- In 2017, three off-cycle pole reviews were completed and replacements identified.
- In 2017, aerial cable or Hendrix cable will be evaluated for a stretch of difficult-to-access line that runs through a heavily wooded area.
- In 2017, tap fuses were installed at three locations.
- In 2018, two additional locations will receive fusing.
- In 2018, two non-communicating devices will be replaced with Smart Grid devices.

06 Circuit 26602 -- BROOKSIDE 66-02

Performance Analysis

The BROOKSIDE 66-02 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On November 20, 2016, during a period of strong wind, an equipment failure occurred on a pole or pole arm. This outage affected 1,205 customers for up to 1,221 minutes resulting in 671,065 CMI.

On July 24, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,468 customers for up to 1,682 minutes resulting in 743,686 CMI.

In total, the BROOKSIDE 66-02 circuit had 23 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (12); equipment failure (8); nothing found (2); other (1).

Remedial Actions

- In 2016, an Expanded Operational Review was performed.
- In 2016, a recloser was replaced with a remotely operable recloser.
- In 2016, the BROOKSIDE substation was upgraded and all getaways were replaced.
- In 2017, a tie to the BROOKSIDE 66-03 was constructed.
- In 2017, two additional switches and one additional fusing location will be evaluated.
- In 2017, additional porcelain cutouts will be replaced with polymer cutouts.
- In 2018, an additional Smart Grid device will be installed.
- In 2018, additional animal guarding will be performed on this circuit.
- In 2019, full circuit tree trimming will be performed.

07 Circuit 47001 -- HUGHESVILLE 70-01

Performance Analysis

The HUGHESVILLE 70-01 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,105 customers for up to 2,621 minutes resulting in 371,749 CMI.

On May 5, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 823 customers for up to 1,863 minutes resulting in 615,887 CMI.

In total, the HUGHESVILLE 70-01 circuit had 65 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (39); equipment failure (15); nothing found (4); animal contacts (3); other (3); contact or dig in (1).

Remedial Actions

- In 2016, full circuit tree trimming was performed.
- In 2017, several devices will be upgraded to remote operability to expedite sectionalizing capability.
- In 2017, additional fusing will be installed.
- In 2018, reconductoring a section of single phase line will be evaluated for 2018.

08 Circuit 42001 -- MONTOURSVILLE 20-01

Performance Analysis

The MONTOURSVILLE 20-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,658 customers for up to 2,871 minutes resulting in 1,047,841 CMI.

In total, the MONTOURSVILLE 20-01 circuit had 56 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (25); animal contacts (14); equipment failure (13); nothing found (3); other (1).

Remedial Actions

- In 2017, full circuit tree trimming was performed.
- In 2017, an Expanded Operational Review was performed on this circuit. As a result, five additional fuses and five additional animal guards will be installed in 2018, and two transformer cutouts will be replaced.
- In 2017, additional fusing will be installed on this circuit at six locations.
- In 2017, several fuse cutouts will be replaced on this circuit.
- In 2018, additional animal guarding will be installed on this circuit.
- In 2018, an existing recloser will be upgraded to a Smart Grid device.
- In 2018, relocating a section of difficult to access conductor to a more accessible location will be evaluated.

09 Circuit 65802 -- ROHRERSTOWN 58-02

Performance Analysis

The ROHRERSTOWN 58-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On September 5, 2017, during a period of heavy rain, a tree made contact with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,882 customers for up to 1,915 minutes resulting in 762,240 CMI.

In total, the ROHRERSTOWN 58-02 circuit had 36 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (24); equipment failure (5); vehicles (4); animal contacts (2); other (1).

Remedial Actions

- In 2017, an Expanded Operational Review was performed. As a result, several locations received additional fusing.
- In 2017, an existing switch will be converted to a protective device and circuit reconfiguration will be completed.
- In 2017, a new load break disconnect switch will be installed.
- In 2018, full circuit tree trimming will be performed.

10 Circuit 45702 -- LINDEN 57-02

Performance Analysis

The LINDEN 57-02 circuit experienced five outages of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 99 customers for up to 2,088 minutes resulting in 123,237 CMI.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 65 customers for up to 1,928 minutes resulting in 118,249 CMI.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 40 customers for up to 3,389 minutes resulting in 110,647 CMI.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 110 customers for up to 1,371 minutes resulting in 138,447 CMI.

On May 1, 2017, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 226 customers for up to 2,623 minutes resulting in 364,403 CMI.

In total, the LINDEN 57-02 circuit had 66 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (40); equipment failure (13); nothing found (5); animal contacts (4); other (3); vehicles (1).

Remedial Actions

- In 2017, additional animal guarding was installed at several locations.
- In 2017, additional fusing was installed at one location.
- In 2017, additional fusing will be installed at four locations.
- In 2018, full circuit tree trimming will be performed.
- In 2018, three additional Smart Grid reclosers will be added to this circuit.

11 Circuit 54501 -- ENOLA 45-01

Performance Analysis

The ENOLA 45-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On August 4, 2017, during a period of lightning, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 8,195 customers for up to 637 minutes resulting in 913,677 CMI.

In total, the ENOLA 45-01 circuit had 11 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (4); equipment failure (3); animal contacts (2); Improper Operation (1); other (1).

Remedial Actions

- In 2017, stranded load study was performed.
- In 2017, a protection study was performed.
- In 2017, a substation rebuild will be evaluated.

12 Circuit 54101 -- S SHERMANSDALE 41-01

Performance Analysis

The S SHERMANSDALE 41-01 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 12, 2017, during a period of strong wind, a tree made contact with an overhead transmission component causing a recloser to trip to lockout. This outage affected 1,578 customers for up to 110 minutes resulting in 173,580 CMI.

On February 12, 2017, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,577 customers for up to 1,165 minutes resulting in 504,959 CMI.

In total, the S SHERMANSDALE 41-01 circuit had 49 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (26); equipment failure (12); animal contacts (5); nothing found (3); contact or dig in (2); vehicles (1).

Remedial Actions

- In 2017, two single-phase reclosers were replaced.
- In 2017, one three-phase recloser was upgraded to a Smart Grid device.
- In 2017, additional series fusing will be evaluated.
- In 2017, an Expanded Operational Review will be performed.
- In 2017, full circuit tree trimming will be performed.
- In 2017, a new single-phase recloser will be installed.
- In 2017, a tie point will be evaluated for automation on this circuit.
- In 2017, another sectionalizing device will be evaluated for installation on this circuit.

13 Circuit 43108 -- SOUTH MILTON 31-08

Performance Analysis

The SOUTH MILTON 31-08 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On March 27, 2017, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 987 customers for up to 624 minutes resulting in 615,888 CMI.

On August 19, 2017, during a period of strong wind, a tree made contact with a pole or pole arm causing a load break disconnect switch to be interrupted. This outage affected 151 customers for up to 862 minutes resulting in 130,127 CMI.

In total, the SOUTH MILTON 31-08 circuit had 23 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (13); equipment failure (5); animal contacts (4); other (1).

Remedial Actions

- In 2017, a targeted circuit patrol was performed, resulting in several lightning arrestors being replaced.
- In 2017, several protective settings at the circuit breaker and several downstream reclosers were changed.
- In 2017, a recloser was upgraded to a Smart Grid device.
- In 2017, a single-phase recloser will be installed.
- In 2017, an Expanded Operational Review will be performed.
- In 2018, full circuit tree trimming will be performed.
- In 2018, two sections of single-phase will be relocated.

14 Circuit 24602 -- VARDEN 46-02

Performance Analysis

The VARDEN 46-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On July 20, 2017, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 345 customers for up to 1,699 minutes resulting in 482,867 CMI.

In total, the VARDEN 46-02 circuit had 32 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (19); animal contacts (6); equipment failure (6); vehicles (1).

Remedial Actions

- In 2017, a load break disconnect will be installed.
- In 2017, a section of single phase line will be evaluated for relocation
- In 2017, a single phase recloser installation will be evaluated.
- In 2017, sections of single and two phase conductor will be reviewed for protection exposure.
- In 2018, a motor operated air break switch will have smart fault indicators installed as part of the Smart Grid Initiative.
- In 2018, full circuit tree trimming will be performed.

15 Circuit 46801 -- HEPBURN 68-01

Performance Analysis

The HEPBURN 68-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of heavy rain, a tree made contact with a pole causing a recloser to trip to lockout. This outage affected 374 customers for up to 2,822 minutes resulting in 497,892 CMI.

In total, the HEPBURN 68-01 circuit had 40 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (20); animal contacts (8); equipment failure (8); nothing found (3); other (1).

Remedial Actions

- In 2017, animal guarding will be added at two locations.
- In 2017, fusing will be installed at three locations.
- In 2018, full circuit tree trimming will be performed.
- In 2019, a new line and terminal will split this circuit into smaller customer blocks.
- In 2019, the substation will undergo a full upgrade.

16 Circuit 28602 -- BLYTHEBURN 86-02

Performance Analysis

The BLYTHEBURN 86-02 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On January 22, 2017, during a period of heavy rain, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 1,933 customers for up to 581 minutes resulting in 516,687 CMI.

On July 24, 2017, during a period of heavy rain, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 345 customers for up to 609 minutes resulting in 166,436 CMI.

In total, the BLYTHEBURN 86-02 circuit had 15 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (11); equipment failure (2); vehicles (2).

Remedial Actions

- In 2017, five additional taps were fused.
- In 2017, a load break switch was installed to improve sectionalizing capability.
- In 2017, an existing three-phase recloser was upgraded to a telemetric recloser.
- In 2017, a new tie between this circuit and the WRIGHT 36-04 will be evaluated.
- In 2018, a three-phase automatic recloser will be installed as part of the Smart Grid Initiative.
- In 2018, full circuit tree trimming will be performed.

17 Circuit 26603 -- BROOKSIDE 66-03

Performance Analysis

The BROOKSIDE 66-03 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On July 24, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 984 customers for up to 1,536 minutes resulting in 431,166 CMI.

In total, the BROOKSIDE 66-03 circuit had 48 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (26); equipment failure (10); animal contacts (4); nothing found (3); other (3); Improper Operation (1); vehicles (1).

Remedial Actions

- In 2016, hazard tree removal was performed.
- In 2017, a three phase recloser was replaced.
- In 2017, additional fusing locations will be evaluated.
- In 2018, a motor operated air break switch will be replaced with a recloser as part of the Smart Grid Initiative.
- In 2019, full circuit tree trimming will be performed.

18 Circuit 67702 -- WERNERSVILLE 77-02

Performance Analysis

The WERNERSVILLE 77-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 626 customers for up to 1,365 minutes resulting in 605,193 CMI.

In total, the WERNERSVILLE 77-02 circuit had 5 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (5).

Remedial Actions

- In 2016, full circuit tree trimming was performed.
- In 2017, the protection scheme for this circuit will be evaluated.
- In 2017, a motor operated air break switch was upgraded with fault indication technology.
- In 2017, a section of single phase line will be resourced to the REINHOLDS 12-02 line.
- In 2017, several single-phase fusing locations will be evaluated.
- In 2017, replacing two solid blade disconnects with fuses will be evaluated.

19 Circuit 26402 -- INDIAN ORCHARD 64-02

Performance Analysis

The INDIAN ORCHARD 64-02 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 406 customers for up to 539 minutes resulting in 218,586 CMI.

On February 25, 2017, during a period of strong wind, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 374 customers for up to 296 minutes resulting in 110,928 CMI.

In total, the INDIAN ORCHARD 64-02 circuit had 49 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (24); animal contacts (9); equipment failure (8); nothing found (5); vehicles (2); other (1).

Remedial Actions

- In 2017, coordination between single-phase and three-phase reclosers was optimized for this circuit.
- In 2017, a solid blade disconnect was installed.
- In 2017, additional animal guarding will be installed.
- In 2017 and 2019, two reclosers will be replaced on this circuit.
- In 2018, a section of single-phase will be relocated to another circuit.
- In 2018, an Expanded Operational Review will be performed.

20 Circuit 46504 -- LOCK HAVEN 65-04

Performance Analysis

The LOCK HAVEN 65-04 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On May 2, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 243 customers for up to 671 minutes resulting in 140,203 CMI.

On August 4, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 243 customers for up to 1,556 minutes resulting in 122,406 CMI.

In total, the LOCK HAVEN 65-04 circuit had 46 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (26); equipment failure (9); animal contacts (4); other (3); nothing found (2); vehicles (2).

Remedial Actions

- In 2016, an Expanded Operational Review was performed and three additional fusing locations and two animal guarding locations were identified. These remediations will be completed in 2017.
- In 2017, additional single-phase load break disconnects were installed.
- In 2017, an additional Smart Grid device was installed.
- In 2017, full circuit tree trimming was performed.

21 Circuit 43504 -- W WILLIAMSPORT 35-04

Performance Analysis

The W WILLIAMSPORT 35-04 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of strong wind, a tree made contact with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,594 customers for up to 2,788 minutes resulting in 508,903 CMI.

In total, the W WILLIAMSPORT 35-04 circuit had 19 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (10); animal contacts (3); equipment failure (3); nothing found (2); other (1).

Remedial Actions

- In 2017, animal guarding was installed at 17 locations.
- In 2017, an additional recloser was installed on this circuit.
- In 2017, additional fusing was installed on this circuit.
- In 2017, full circuit tree trimming was performed on this circuit.
- In 2017, three additional locations will be animal guarded.

22 Circuit 16005 -- DORNEYVILLE 60-05

Performance Analysis

The DORNEYVILLE 60-05 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On July 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,133 customers for up to 1,202 minutes resulting in 465,221 CMI.

In total, the DORNEYVILLE 60-05 circuit had 30 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (18); animal contacts (3); equipment failure (3); nothing found (3); vehicles (2); other (1).

Remedial Actions

- In 2017 a new line and terminal was installed.
- In 2017 additional animal guarding was installed.
- In 2017 a recloser was updated to triple/single operation.
- In 2017, the protection settings on a Smart Grid device will be optimized.
- In 2017, the addition of a new recloser will be evaluated.
- In 2017, additional fusing will be evaluated.

23 Circuit 52401 -- GREEN PARK 24-01

Performance Analysis

The GREEN PARK 24-01 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On October 11, 2016, a vehicle made contact with a pole causing an interruption. This outage affected 433 customers for up to 325 minutes resulting in 136,027 CMI.

On February 12, 2017, during a period of strong wind, a tree made contact with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,324 customers for up to 122 minutes resulting in 161,528 CMI.

In total, the GREEN PARK 24-01 circuit had 79 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (55); equipment failure (11); animal contacts (8); nothing found (3); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2016, an Expanded Operational Review was performed. As a result, several switches, cross-arms, and arrestors were replaced.
- In 2016, a recloser was replaced for improved protection coordination.
- In 2016, transmission arms and braces were replaced.
- In 2017, full circuit tree trimming was performed.
- In 2017, the relocation of a difficult-to-access section will be investigated.
- In 2017, fusing will be installed in multiple locations.
- In 2017, an additional new protective device will be evaluated.
- In 2017, additional reclosers and fusing will be evaluated.
- In 2017, circuit breaker relays will be upgraded at the substation.

24 Circuit 64304 -- LINCOLN 43-04

Performance Analysis

The LINCOLN 43-04 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 682 customers for up to 2,718 minutes resulting in 453,725 CMI.

On July 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 673 customers for up to 343 minutes resulting in 158,132 CMI.

In total, the LINCOLN 43-04 circuit had 21 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (12); equipment failure (4); animal contacts (3); other (1); vehicles (1).

Remedial Actions

- In 2016, full circuit tree trimming was performed.
- In 2017, an Expanded Operational Review was performed, with eight additional fusing locations and one recloser identified for installation this year.
- In 2017, a new triple-single recloser was installed.
- In 2017, a section of single-phase line will be transferred to an alternate source.
- In 2017, reconductoring a section of single phase and a tie line to the REINHOLDS 12-02 line will be evaluated.
- In 2017, two underground cable residential developments will receive cable curing.

25 Circuit 44203 -- POINT 42-03

Performance Analysis

The POINT 42-03 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On July 24, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 746 customers for up to 138 minutes resulting in 102,634 CMI.

On August 4, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,879 customers for up to 210 minutes resulting in 393,575 CMI.

In total, the POINT 42-03 circuit had 41 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (17); equipment failure (11); animal contacts (7); vehicles (4); nothing found (1); other (1).

Remedial Actions

- In 2017, additional three phase fusing was installed.
- In 2017, full circuit tree trimming was performed.
- In 2017, two existing devices will be upgraded to Smart Grid devices.
- In 2017, an additional Smart Grid device will be added to this circuit.
- In 2018, an additional Smart Grid device will be added to this circuit.

26 Circuit 46702 -- RENOVO 67-02

Performance Analysis

The RENOVO 67-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On August 4, 2017, during a period of strong wind, a tree made contact with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,273 customers for up to 1,725 minutes resulting in 426,141 CMI.

In total, the RENOVO 67-02 circuit had 37 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (27); equipment failure (5); nothing found (3); animal contacts (2).

Remedial Actions

- In 2016, hot spot tree trimming was performed.
- In 2017, an existing recloser was upgraded to a Smart Grid device.
- In 2017, a solid blade disconnect will be installed.
- In 2017, additional fusing will be installed on this circuit.
- In 2018, a section of three-phase conductor that is susceptible to tree outages is scheduled for relocation.
- In 2018, full circuit tree trimming will be performed.

27 Circuit 40702 -- FAIRFIELD 07-02

Performance Analysis

The FAIRFIELD 07-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of heavy rain, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,016 customers for up to 3,022 minutes resulting in 525,586 CMI.

In total, the FAIRFIELD 07-02 circuit had 20 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (10); equipment failure (5); nothing found (3); animal contacts (1); other (1).

Remedial Actions

- In 2017, full circuit tree trimming was performed.
- In 2018, a section of difficult-to-access conductor will be relocated to a more accessible location.
- In 2018, three Smart Grid devices will be installed on this circuit; two at new locations and one to replace an existing non-telemetric recloser.

28 Circuit 43102 -- SOUTH MILTON 31-02

Performance Analysis

The SOUTH MILTON 31-02 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On March 27, 2017, during a period of heavy rain, an equipment failure occurred on an overhead transmission component causing a motor operated switch to be interrupted. This outage affected 335 customers for up to 371 minutes resulting in 124,285 CMI.

On March 27, 2017, during a period of heavy rain, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 988 customers for up to 628 minutes resulting in 354,802 CMI.

In total, the SOUTH MILTON 31-02 circuit had 24 outages between October 2016 and September 2017, with the causes breaking down as follows: equipment failure (10); tree related (9); animal contacts (5).

Remedial Actions

- In 2017, fusing was added at three locations.
- In 2018, a section of difficult-to-access conductor will be relocated to a more accessible location.
- In 2019, full circuit tree trimming will be performed.

29 Circuit 67605 -- WARWICK 76-05

Performance Analysis

The WARWICK 76-05 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 579 customers for up to 491 minutes resulting in 149,811 CMI.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 209 customers for up to 2,841 minutes resulting in 326,871 CMI.

In total, the WARWICK 76-05 circuit had 40 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (21); equipment failure (11); animal contacts (4); nothing found (3); other (1).

Remedial Actions

- In 2017, a post-storm patrol was performed on this circuit. Several minor items were identified and have been corrected in 2017.
- In 2017, two solid blade disconnect switches were replaced with fuses.
- In 2017, fusing will be installed at several locations.
- In 2017, a new load break disconnect switch will be installed.
- In 2018, a new telemetered recloser will be installed as part as the Smart Grid Initiative.

30 Circuit 47704 -- BLOOMSBURG 77-04

Performance Analysis

The BLOOMSBURG 77-04 circuit experienced three outages of over 100,000 CMI between October 2016 and September 2017.

On January 26, 2017, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 983 customers for up to 256 minutes resulting in 119,482 CMI.

On April 11, 2017, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,374 customers for up to 360 minutes resulting in 151,674 CMI.

On April 19, 2017, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,243 customers for up to 345 minutes resulting in 203,623 CMI.

In total, the BLOOMSBURG 77-04 circuit had 38 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (16); equipment failure (10); animal contacts (6); nothing found (2); other (2); vehicles (2).

Remedial Actions

- In 2016, a section of difficult-to-access conductor was relocated to a more accessible location.
- In 2016, an additional tie line was added to this circuit to improve sectionalizing capability.
- In 2017, maintenance was performed on the circuit breaker.
- In 2017, additional fault indicators and disconnect switches were added to this circuit.
- In 2017, hazard tree removal was performed on this circuit.

31 Circuit 40101 -- HUNTER 01-01

Performance Analysis

The HUNTER 01-01 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 1, 2017, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 905 customers for up to 147 minutes resulting in 132,301 CMI.

On July 29, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,121 customers for up to 486 minutes resulting in 445,982 CMI.

In total, the HUNTER 01-01 circuit had 37 outages between October 2016 and September 2017, with the causes breaking down as follows: equipment failure (12); tree related (12); animal contacts (7); nothing found (3); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In 2017, hazard trees were removed from this circuit.
- In 2017, additional fusing will be evaluated.
- In 2018, two non-communicating devices will be upgrade to Smart Grid devices.
- In 2018, pole arms will be replaced at five locations.

32 Circuit 25501 -- MADISONVILLE 55-01

Performance Analysis

The MADISONVILLE 55-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On March 2, 2017, during a period of strong wind, a tree made contact with an overhead conductor. This outage affected 468 customers for up to 568 minutes resulting in 139,531 CMI.

In total, the MADISONVILLE 55-01 circuit had 49 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (25); nothing found (7); animal contacts (6); equipment failure (6); vehicles (3); contact or dig in (1); other (1).

Remedial Actions

- In 2017, an Expanded Operational Review was performed.
- In 2017, fusing was added at multiple locations.
- In 2017, additional hot spot trimming was performed.
- In 2017, multiple locations will be animal guarded.
- In 2017, a section of difficult-to-access single-phase will be relocated.
- In 2017, upgraded relays will be installed at this substation for enhanced fault indication.
- In 2017, a motor operated air break will be replaced.

33 Circuit 26601 -- BROOKSIDE 66-01

Performance Analysis

The BROOKSIDE 66-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On August 4, 2017, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 566 customers for up to 1,588 minutes resulting in 268,724 CMI.

In total, the BROOKSIDE 66-01 circuit had 37 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (20); equipment failure (6); vehicles (4); animal contacts (3); nothing found (3); contact or dig in (1).

Remedial Actions

- In 2016, an Expanded Operational Review was performed.
- In 2017, additional animal guarding was installed.
- In 2017, hot spot trimming will be evaluated.
- In 2017, a full circuit protection analysis will be performed.

34 Circuit 59002 -- MIFFLINTOWN 90-02

Performance Analysis

The MIFFLINTOWN 90-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On December 11, 2016, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,262 customers for up to 265 minutes resulting in 305,250 CMI.

In total, the MIFFLINTOWN 90-02 circuit had 61 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (33); equipment failure (17); animal contacts (6); nothing found (2); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In 2016, a single-phase fuse was installed.
- In 2016, full circuit tree trimming was performed.
- In 2017, a fuse will be replaced with a recloser and additional downstream fusing will be evaluated.
- In 2017, replacing an additional recloser will be investigated.
- In 2017, reconfiguring single-phase fusing will be investigated.
- In 2017, an additional Smart Grid device will be installed.
- In 2017, a new tie line will be evaluated.
- In 2017, a recloser will be upgraded to a Smart Grid device.
- In 2019, an additional Smart Grid device will be installed.

35 Circuit 52403 -- GREEN PARK 24-03

Performance Analysis

The GREEN PARK 24-03 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 12, 2017, during a period of strong wind, a tree made contact with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,257 customers for up to 121 minutes resulting in 152,210 CMI.

On August 11, 2017, during a period of heavy rain, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,150 customers for up to 179 minutes resulting in 125,756 CMI.

In total, the GREEN PARK 24-03 circuit had 52 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (37); equipment failure (11); vehicles (2); animal contacts (1); contact or dig in (1).

Remedial Actions

- In 2016, an infrared scan was conducted.
- In 2016, two Smart Grid devices were installed.
- In 2016, the transmission line was patrolled by helicopter.
- In 2017, additional fusing will be installed at multiple locations.
- In 2017, relocating a section of difficult-to-access single-phase will be evaluated.
- In 2017, circuit breaker relays will be upgraded at the GREEN PARK substation.
- In 2018, full circuit tree trimming will be performed on this circuit.

36 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On February 12, 2017, during a period of strong wind, a tree made contact with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,670 customers for up to 119 minutes resulting in 198,997 CMI.

In total, the GREEN PARK 24-02 circuit had 65 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (43); equipment failure (18); animal contacts (2); nothing found (1); vehicles (1).

Remedial Actions

- In 2016, fusing control logic was analyzed and adjusted.
- In 2016, an additional Smart Grid device was installed.
- In 2016, a section of difficult-to-access three-phase was relocated to a more accessible location.
- In 2016, transmission arms and braces supporting this circuit were replaced.
- In 2017, four Smart Grid devices were installed, one with triple-single capability.
- In 2017, circuit breaker relays will be upgraded at the substation.
- In 2017, the installation of a single-phase recloser will be investigated.
- In 2017, additional fusing will be investigated.
- In 2017, three additional triple-single locations will be investigated.
- In 2017, two locations will be investigated for transformer upgrades.

37 Circuit 26703 -- HEMLOCK FARMS 67-03

Performance Analysis

The HEMLOCK FARMS 67-03 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On January 23, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 141 customers for up to 967 minutes resulting in 121,275 CMI.

On January 24, 2017, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 867 customers for up to 777 minutes resulting in 151,226 CMI.

In total, the HEMLOCK FARMS 67-03 circuit had 46 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (23); animal contacts (12); equipment failure (7); nothing found (2); vehicles (2).

Remedial Actions

- In 2017, an additional recloser was installed as part of the Smart Grid Initiative.
- In 2017, multiple locations will be fused.
- In 2017, two additional load break disconnect switches will be installed.
- In 2017, additional animal guarding will be installed.

38 Circuit 13503 -- MC MICHAELS 35-03

Performance Analysis

The MC MICHAELS 35-03 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 9, 2017, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 467 customers for up to 824 minutes resulting in 341,267 CMI.

On August 10, 2017, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 650 customers for up to 444 minutes resulting in 187,679 CMI.

In total, the MC MICHAELS 35-03 circuit had 30 outages between October 2016 and September 2017, with the causes breaking down as follows: equipment failure (10); animal contacts (9); tree related (7); vehicles (2); nothing found (1); other (1).

Remedial Actions

- In 2017, full circuit tree trimming will be performed.
- In 2017, a three-phase recloser will be installed as part of the Smart Grid Initiative.
- In 2017, a full circuit protection review will be performed.

39 Circuit 65702 -- ROSEVILLE 57-02

Performance Analysis

The ROSEVILLE 57-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On September 5, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 189 customers for up to 1,154 minutes resulting in 159,922 CMI.

In total, the ROSEVILLE 57-02 circuit had 40 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (16); equipment failure (13); animal contacts (9); nothing found (2).

Remedial Actions

- In 2017, a new telemetered recloser was installed as part of the Smart Grid Initiative.
- In 2017, an Expanded Operational Review was performed. As a result, several fusing opportunities (see below) were identified
- In 2017, an existing fuse will be replaced with a single phase recloser.
- In 2017, several locations will be fused.
- In 2017, a new single phase recloser will be installed.
- In 2018, full circuit tree trimming will be performed.

40 Circuit 26401 -- INDIAN ORCHARD 64-01

Performance Analysis

The INDIAN ORCHARD 64-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 185 customers for up to 846 minutes resulting in 145,280 CMI.

In total, the INDIAN ORCHARD 64-01 circuit had 70 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (43); equipment failure (12); animal contacts (9); nothing found (4); other (1); vehicles (1).

Remedial Actions

- In 2017, additional animal guarding will be installed.
- In 2017, a three phase recloser installation will be evaluated.
- In 2018, a difficult-to-access section of three-phase conductor will be relocated.
- In 2018, a three-phase recloser will be converted to triple-single operation.

41 Circuit 24401 -- TINKER 44-01

Performance Analysis

The TINKER 44-01 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 9, 2017, an equipment failure occurred on a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,260 customers for up to 278 minutes resulting in 143,975 CMI.

On February 13, 2017, during a period of strong wind, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,261 customers for up to 147 minutes resulting in 185,165 CMI.

In total, the TINKER 44-01 circuit had 58 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (28); equipment failure (20); animal contacts (5); other (4); nothing found (1).

Remedial Actions

- In 2017, an Expanded Operational Review was performed.
- In 2017, fusing will be installed at multiple locations.
- In 2017, a section of difficult-to-access conductor will be moved to a more accessible location.
- In 2017, an additional section of difficult-to-access conductor will be evaluated for relocation.
- In 2017, several porcelain fuse cutouts will be replaced with polymer cutouts.
- In 2018, animal guarding will be installed at multiple locations.

42 Circuit 41202 -- KENMAR 12-02

Performance Analysis

The KENMAR 12-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 124 customers for up to 1,453 minutes resulting in 130,184 CMI.

In total, the KENMAR 12-02 circuit had 57 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (32); animal contacts (11); equipment failure (9); nothing found (4); vehicles (1).

Remedial Actions

- In 2017, full circuit tree trimming was performed.
- In 2017, an Expanded Operational Review will be performed on this circuit.
- In 2017, animal guarding will be installed at six locations on this circuit.

43 Circuit 55002 -- NEWPORT 50-02

Performance Analysis

The NEWPORT 50-02 circuit experienced no outages of over 100,000 CMI between October 2016 and September 2017.

In total, the NEWPORT 50-02 circuit had 86 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (51); equipment failure (22); animal contacts (9); nothing found (2); other (2).

Remedial Actions

- In 2017, a section of single-phase line will be evaluated for transference to an alternate source.
- In 2018, full circuit tree trimming will be performed.
- In 2018, the substation will be upgraded and the power transformers will be replaced.

44 Circuit 51502 -- SWATARA 15-02

Performance Analysis

The SWATARA 15-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On December 28, 2016, an equipment failure occurred on an overhead conductor causing a temporary open point to be interrupted. This outage affected 3,099 customers for up to 625 minutes resulting in 507,177 CMI.

In total, the SWATARA 15-02 circuit had 16 outages between October 2016 and September 2017, with the causes breaking down as follows: equipment failure (6); animal contacts (5); tree related (3); nothing found (1); vehicles (1).

Remedial Actions

- In 2017, four Smart Grid devices were installed; one additional will be installed, along with one replacement in 2018.
- In 2017, a section of this circuit will be reconductored.
- In 2017, one motor-operated air-break switch will be evaluated for replacement with a Smart Grid device.
- In 2018, one additional Smart Grid device will be installed.

45 Circuit 25503 -- MADISONVILLE 55-03

Performance Analysis

The MADISONVILLE 55-03 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On November 20, 2016, during a period of ice/sleet/snow, a tree made contact with an overhead splice causing a recloser to trip to lockout. This outage affected 256 customers for up to 806 minutes resulting in 197,740 CMI.

On May 1, 2017, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 411 customers for up to 823 minutes resulting in 300,015 CMI.

In total, the MADISONVILLE 55-03 circuit had 25 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (11); equipment failure (7); animal contacts (3); nothing found (3); other (1).

Remedial Actions

- In 2017, upgraded relays will be installed at this substation for improved fault indication.
- In 2018, full circuit tree trimming will be performed.
- In 2018, additional animal guarding will be installed.

46 Circuit 46203 -- DANVILLE 62-03

Performance Analysis

The DANVILLE 62-03 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On December 18, 2016, during a period of heavy rain, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 676 customers for up to 528 minutes resulting in 243,899 CMI.

In total, the DANVILLE 62-03 circuit had 43 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (20); equipment failure (10); nothing found (6); vehicles (4); animal contacts (3).

Remedial Actions

- In 2016, full circuit tree trimming was performed.
- In 2016, two automated reclosers were installed as part of the Smart Grid Initiative.
- In 2016, an Expanded Operational Review was performed.
- In 2017, several hazard trees were removed.
- In 2017, an additional recloser will be evaluated for this circuit.

47 Circuit 29701 -- ANGELS 91-01

Performance Analysis

The ANGELS 91-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On March 2, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 562 customers for up to 832 minutes resulting in 436,784 CMI.

In total, the ANGELS 91-01 circuit had 18 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (12); equipment failure (4); animal contacts (1); vehicles (1).

Remedial Actions

- In 2017, an additional three-phase switch or recloser will be evaluated.
- In 2017, additional locations will receive animal guarding.
- In 2018, full circuit tree trimming will be performed.
- In 2018, an Expanded Operational Review will be performed.

48 Circuit 53602 -- DALMATIA 36-02

Performance Analysis

The DALMATIA 36-02 circuit experienced no outages of over 100,000 CMI between October 2016 and September 2017.

In total, the DALMATIA 36-02 circuit had 79 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (57); equipment failure (10); animal contacts (7); vehicles (2); contact or dig in (1); nothing found (1); other (1).

Remedial Actions

- In 2018, the MEISERVILLE substation will be built to provide load support for this circuit.
- In 2018, full circuit tree trimming will be performed.

49 Circuit 23401 -- HONESDALE 34-01

Performance Analysis

The HONESDALE 34-01 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On October 27, 2016, during a period of lightning, a contact or dig occured on an overhead conductor causing a load break fuse to operate. This outage affected 490 customers for up to 1,202 minutes resulting in 111,594 CMI.

On February 25, 2017, during a period of strong wind, an equipment failure occurred on an overhead transformer causing a recloser to trip to lockout. This outage affected 488 customers for up to 266 minutes resulting in 119,378 CMI.

In total, the HONESDALE 34-01 circuit had 41 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (20); equipment failure (12); animal contacts (4); contact or dig in (3); nothing found (1); other (1).

Remedial Actions

- In 2016, a section of difficult-to-access single-phase conductor was relocated to a more accessible location.
- In 2017, an automated tie point was installed.
- In 2017, new three-phase voltage regulators will be installed.
- In 2017, two additional fuses will be installed.
- In 2017, a section of single-phase conductor will be moved to a more accessible location.
- In 2017, additional animal guarding will be installed.
- In 2018, full circuit tree trimming will be performed.
- In 2018, an air-break will receive fault indication as part of the Smart Grid Initiative.

50 Circuit 46802 -- HEPBURN 68-02

Performance Analysis

The HEPBURN 68-02 circuit experienced no outages of over 100,000 CMI between October 2016 and September 2017.

In total, the HEPBURN 68-02 circuit had 90 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (54); equipment failure (17); animal contacts (16); nothing found (1); other (1); vehicles (1).

Remedial Actions

- In 2017, animal guarding was added at multiple locations.
- In 2017, multiple locations will receive fusing.
- In 2017, a section of difficult-to-access single phase will be evaluated for relocation.
- In 2018, full circuit tree trimming will be performed on this circuit.
- In 2018, an underground dip will be proactively replaced.

51 Circuit 56802 -- BENVENUE 68-02

Performance Analysis

The BENVENUE 68-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On February 12, 2017, during a period of strong wind, a tree made contact with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,512 customers for up to 325 minutes resulting in 199,969 CMI.

In total, the BENVENUE 68-02 circuit had 43 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (18); equipment failure (15); animal contacts (8); other (1); vehicles (1).

Remedial Actions

- In 2016, the transmission line access roads were rebuilt.
- In 2016, the transmission arms and braces were replaced.
- In 2017, additional animal guarding installation will be evaluated.
- In 2017, a hydraulic recloser will be evaluated for upgrading to a Smart Grid device.
- In 2018, this circuit breaker will be replaced, and will be equipped with Smart relaying.

52 Circuit 24901 -- WHITE HAVEN 49-01

Performance Analysis

The WHITE HAVEN 49-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On July 20, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 589 customers for up to 577 minutes resulting in 251,021 CMI.

In total, the WHITE HAVEN 49-01 circuit had 48 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (30); equipment failure (9); animal contacts (6); nothing found (3).

Remedial Actions

- In 2017, this circuit was IR scanned, and several minor repairs were completed.
- In 2017, extending a section of three-phase line and making it more accessible will be evaluated.
- In 2018, an existing switch will be upgraded to a Smart Grid device.
- In 2018, adding a line and terminal will be evaluated.

53 Circuit 66102 -- REAMSTOWN 61-02

Performance Analysis

The REAMSTOWN 61-02 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On May 17, 2017, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 2,005 customers for up to 72 minutes resulting in 121,441 CMI.

On August 18, 2017, during a period of heavy rain, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 1,410 customers for up to 262 minutes resulting in 287,472 CMI.

In total, the REAMSTOWN 61-02 circuit had 20 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (8); equipment failure (5); vehicles (4); nothing found (2); animal contacts (1).

Remedial Actions

- In 2017, three existing three phase recloser were configured for single phase lockout operations
- In 2017, a dead-end insulator was replaced.
- In 2017, three underground primary cables were replaced.
- In 2017, a section of three phase line will be reconfigured.
- In 2017, an existing solid blade disconnect will be replaced with a fuse.
- In 2017, an existing three-phase recloser will be replaced as part of the Smart Grid Initiative.
- In 2017, over 25 porcelain cutouts will be replaced with polymer cutouts.
- In 2017, resourcing a section of single phase line will be investigated.

54 Circuit 64302 -- LINCOLN 43-02

Performance Analysis

The LINCOLN 43-02 circuit experienced two outages of over 100,000 CMI between October 2016 and September 2017.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing an interruption. This outage affected 161 customers for up to 2,699 minutes resulting in 310,906 CMI.

On February 25, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 90 customers for up to 1,390 minutes resulting in 113,204 CMI.

In total, the LINCOLN 43-02 circuit had 26 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (19); equipment failure (6); other (1).

Remedial Actions

- In 2017, an Expanded Operational Review was performed. As a result, nine new locations will be fused.
- In 2017, full circuit tree trimming will be performed.
- In 2017, a section of difficult-to-access single phase conductor will be evaluated for relocation.
- In 2018, an additional Smart Grid device will be installed.

55 Circuit 47401 -- PENNS 74-01

Performance Analysis

The PENNS 74-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 5, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 667 customers for up to 545 minutes resulting in 161,596 CMI.

In total, the PENNS 74-01 circuit had 29 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (11); equipment failure (7); animal contacts (6); other (2); vehicles (2); nothing found (1).

Remedial Actions

- In 2016, full circuit tree trimming was performed.
- In 2017, an existing recloser will be upgraded to a Smart Grid device.
- In 2017, controls on an existing Smart Grid device will be replaced.
- In 2017, additional animal guarding will be evaluated for this circuit.
- In 2018, an additional Smart Grid device will be installed on this circuit.

56 Circuit 43101 -- SOUTH MILTON 31-01

Performance Analysis

The SOUTH MILTON 31-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On March 27, 2017, during a period of heavy rain, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,448 customers for up to 397 minutes resulting in 275,087 CMI.

In total, the SOUTH MILTON 31-01 circuit had 42 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (22); animal contacts (10); equipment failure (4); nothing found (3); other (2); contact or dig in (1).

Remedial Actions

- In 2017, transmission switching strategy will be evaluated.
- In 2017, an Expanded Operational Review will be performed. sAs a result, an additional Smart Grid device will be installed in 2017.
- In 2017, additional animal guarding will be evaluated for this circuit.
- In 2018, a section of difficult-to-access conductor will be relocated to a more accessible location.

57 Circuit 40901 -- JERSEY SHORE 09-01

Performance Analysis

The JERSEY SHORE 09-01 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On May 1, 2017, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 62 customers for up to 2,067 minutes resulting in 128,111 CMI.

In total, the JERSEY SHORE 09-01 circuit had 56 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (34); equipment failure (14); animal contacts (4); nothing found (3); other (1).

Remedial Actions

- In 2017, full circuit tree trimming will be performed.
- In 2017, an Expanded Operational Review will be performed.
- In 2017, additional fusing will be installed.
- In 2017, multiple transformer cutouts will be replaced.
- In 2017, multiple locations will receive animal guarding.

58 Circuit 22101 -- EDELLA 21-01

Performance Analysis

The EDELLA 21-01 circuit experienced three outages of over 100,000 CMI between October 2016 and September 2017.

On November 11, 2016, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,110 customers for up to 253 minutes resulting in 126,813 CMI.

On February 25, 2017, during a period of strong wind, an equipment failure occurred on an overhead switch causing a temporary open point to be interrupted. This outage affected 361 customers for up to 500 minutes resulting in 180,370 CMI.

On April 30, 2017, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 1,124 customers for up to 110 minutes resulting in 122,605 CMI.

In total, the EDELLA 21-01 circuit had 13 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (6); equipment failure (4); animal contacts (2); other (1).

Remedial Actions

- In 2017, full circuit tree trimming was performed.
- In 2017, two reclosers were converted to triple-single operation.
- In 2017, several locations will be evaluated for additional fusing.
- In 2017, relocation of a section of difficult-to-access single-phase conductor will be evaluated.

59 Circuit 24204 -- PROVIDENCE 42-04

Performance Analysis

The PROVIDENCE 42-04 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On July 20, 2017, during a period of strong wind, an equipment failure occurred on a pole or pole arm causing a recloser to trip to lockout. This outage affected 576 customers for up to 1,587 minutes resulting in 491,378 CMI.

In total, the PROVIDENCE 42-04 circuit had 5 outages between October 2016 and September 2017, with the causes breaking down as follows: animal contacts (3); equipment failure (1); nothing found (1).

Remedial Actions

- In 2017, additional animal guarding will be evaluated.
- In 2017, additional three-phase fusing will be evaluated.
- In 2017, an Expanded Operational Review will be performed.
- In 2019, full circuit tree trimming will be performed.

60 Circuit 42701 -- AUGUSTAVILLE 27-01

Performance Analysis

The AUGUSTAVILLE 27-01 circuit experienced no outages of over 100,000 CMI between October 2016 and September 2017.

In total, the AUGUSTAVILLE 27-01 circuit had 54 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (31); equipment failure (10); animal contacts (7); nothing found (3); vehicles (2); other (1).

Remedial Actions

- In 2017, three additional switches were installed on this circuit.
- In 2017, additional fusing will be evaluated for this circuit.
- In 2017, hot spot tree trimming will be evaluated for this circuit.
- In 2018, two difficult-to-access sections of conductor will be evaluated for relocation.
- In 2018, an existing switch will be upgraded to a Smart Grid device.

61 Circuit 59202 -- THOMPSONTOWN 92-02

Performance Analysis

The THOMPSONTOWN 92-02 circuit experienced no outages of over 100,000 CMI between October 2016 and September 2017.

In total, the THOMPSONTOWN 92-02 circuit had 62 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (40); equipment failure (15); animal contacts (4); nothing found (2); vehicles (1).

Remedial Actions

- In 2017, an additional recloser will be installed.
- In 2017, additional fusing opportunities will be evaluated.
- In 2017, an underground dip was replaced.
- In 2018, hot spot tree trimming will be performed on this circuit.

62 Circuit 18502 -- CANADENSIS 85-02

Performance Analysis

The CANADENSIS 85-02 circuit experienced one outage of over 100,000 CMI between October 2016 and September 2017.

On December 27, 2016, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,456 customers for up to 288 minutes resulting in 117,362 CMI.

In total, the CANADENSIS 85-02 circuit had 65 outages between October 2016 and September 2017, with the causes breaking down as follows: tree related (33); animal contacts (18); equipment failure (13); nothing found (1).

Remedial Actions

- In 2016, several additional switches and fault indicators were installed.
- In 2016, full circuit tree trimming was performed.
- In 2016, an Expanded Operational Review was performed.
- In 2017, hazard tree removal was performed on this circuit.
- In 2017, animal guarding was installed at 11 locations.
- In 2017, two sections of single-phase were relocated to more accessible locations.
- In 2017, several capacitor bank controllers will be automated.
- In 2017, a section of difficult-to-access three phase line will be relocated.
- In 2017, an upgraded conversion is being evaluated for the substation.
- In 2018, twelve additional locations will be animal guarded.

5) A rolling 12-month breakdown and analysis of outage causes during the preceding quarter, including the number and percentage of service outages, the number of customers interrupted, and customer interruption minutes categorized by outage cause such as equipment failure, animal contact, tree related, and so forth. Proposed solutions to identified service problems shall be reported.

The following table shows a breakdown of service interruption causes for the 12 months ended at the current quarter. PPL Electric's maintenance programs focus on corrective actions to address controllable service interruptions (e.g., trees and equipment failure).

Cause Description	Trouble Cases	Percent of Trouble Cases	Customer Interruptions	Percent of Customer Interruptions	Customer Minutes	Percent of Customer Minutes
Animals	2,988	18.0%	45,950	4.4%	2,184,723	1.6%
Contact / Dig-In	172	1.0%	12,224	1.2%	978,427	0.7%
Directed by Non-PPL Authority	92	0.6%	25,830	2.5%	1,372,670	1.0%
Equipment Failures	4,805	29.0%	308,446	29.6%	34,487,646	24.7%
Improper Design	-	0.0%	-	0.0%	-	0.0%
Improper Installation	21	0.1%	21,109	2.0%	252,604	0.2%
Improper Operation	9	0.1%	4,968	0.5%	89,208	0.1%
Nothing Found	894	5.4%	51,272	4.9%	4,025,884	2.9%
Other Controllable	108	0.7%	29,113	2.8%	954,582	0.7%
Other Non Control	267	1.6%	30,397	2.9%	2,114,840	1.5%
Other Public	39	0.2%	4,341	0.4%	493,828	0.4%
Tree Related	6,515	39.3%	396,801	38.1%	82,536,332	59.1%
Unknown	-	0.0%	-	0.0%	-	0.0%
Vehicles	681	4.1%	110,776	10.6%	10,237,807	7.3%
Total	16,591	100.0%	1,041,227	100.0%	139,728,551	100.0%

Analysis of causes contributing to the majority of service interruptions:

Weather Conditions: PPL Electric records weather conditions, such as wind or lightning, as contributing factors to service interruptions, but does not code them as direct interruption causes. Therefore, some fluctuations in cause categories, especially tree- and equipment-related causes, are attributable to weather variations. For the current reporting period, weather was considered a significant contributing cause in 51% of cases, 55% of customer interruptions, and 74% of CMI.

Tree Related: PPL Electric has recently increased funding to more aggressively address outside of the right-of-way danger trees. For trees within the right-of-way, PPL Electric has implemented a more aggressive trimming strategy. We are in year four of a five year cycle for the new standard.

Animals: Animals accounted for approximately 18% of PPL Electric's cases of trouble. Although this represents a significant number of cases, the effect on SAIFI and CAIDI is small because approximately 77% of the number of cases of trouble was associated with individual distribution transformers. However, when animal contacts affect substation equipment, the effect may be widespread and potentially can interrupt thousands of customers on multiple circuits. In addition to guarding new distribution transformers and substations, in 2009, PPL Electric initiated distribution and substation animal guarding programs to focus systematically on protecting existing facilities most at risk of incurring animal-caused interruptions. All substations are scheduled to be animal guarded by 2017.

Vehicles: Although vehicles cause a small percentage of the number of cases of trouble, they accounted for a large percentage of customer interruptions and customer minutes, because main distribution lines generally are located along major thoroughfares with higher traffic densities. In addition, vehicle-related cases often result in extended repair times to replace broken poles. Service interruptions due to vehicles are on the rise as a result of an increasing number of drivers and vehicles on the road. PPL Electric has a program to identify and relocate poles that are subject to multiple vehicle hits.

Equipment Failure: Equipment failure is one of the largest single contributors to the number of cases of trouble, customer interruptions and customer minutes. However, approximately 42% of the cases of trouble, 49% of the customer interruptions and 58% of the customer minutes attributed to equipment failure were weather-related and, as such, are not considered to be strong indicators of equipment condition or performance.

Nothing Found: This description is recorded when the responding crew can find no cause for the interruption. That is, when there is no evidence of equipment failure, damage, or contact after a line patrol is completed. For example, during heavy thunderstorms, when a line fuse blows or a single-phase OCR locks open and when closed for test, the fuse holds, or the OCR remains closed, and a patrol reveals nothing.

6) *Quarterly and year-to-date information on progress toward meeting transmission and distribution inspection and maintenance goals/objectives. (For first, second and third quarter reports only.)*

Inspection & Maintenance Goals/Objectives	Annual Budget	3rd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of poles)	422	150	150	238	238
Transmission arm replacements (# of sets)	191	36	36	141	141
Transmission air break switch inspections (# of switches)	0	0	0	0	4
Transmission surge arrester installations (# of sets)	0	0	0	0	0
Transmission structure inspections (# of activities)	33,291	8,323	5,195	33,291	20,584
Transmission tree side trim-Bulk Power (linear feet)	0	0	0	0	0
Transmission herbicide-Bulk Power (# of acres)	0	0	0	0	0
Transmission reclearing (# of miles) BES Only	634	238	138	634	566
Transmission reclearing (# of miles) 69 kV	1476	694	417	1,238	1,051
Transmission reclearing (# of miles) 138 kV	192	114	36	165	118
Transmission danger tree removals-Bulk Power (# of trees)	0	0	0	0	0
Substation					
Substation batteries (# of activities)	660	113	126	432	619
Circuit breakers (# of activities)	980	413	402	817	825
Substation inspections (# of activities)	3,953	830	902	2,604	3,296
Transformer maintenance (# of activities)	169	40	23	122	91

Inspection & Maintenance Goals/Objectives	Annual Budget	3rd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	1,480	1,160	786	1,817	1,444
C-truss distribution poles (# of poles)	3,899	1,272	1,277	2,368	2,373
Capacitor (MVAR added)	404	144	151	641	536
OCR Replacements (# of)	78	0	0	92	76
Distribution pole inspections (# of poles)[4]	60,080	32,676	32,621	69,316	69,261
Distribution line inspections (hours)	6,761	2,797	1644	7,153	6,465
Group re-lamping (# of lamps)	13,994	7,819	8,106	13,333	11,324
Test sections of underground distribution cable	N/A	314	314	921	921
Distribution tree trimming (# of miles)	4,049	1,045	677	3,265	3,303
Distribution herbicide (# of acres)	0	0	0	0	0
Distribution >18" removals within R/W (# of trees)	0	0	0	0	0
Distribution hazard tree removals outside R/W (# of trees)	0	0	0	0	0
LTN manhole inspections (# of)	426	62	40	301	346
LTN vault inspections (# of)	767	221	169	556	550
LTN network protector overhauls (# of)	50	9	18	43	29
LTN reverse power trip testing (# of)	35	5	5	23	21

[4] Due to a 2017 acceleration of work, approximately 90,000 poles will be inspected this year.

7) ***Quarterly and year-to-date information on budgeted versus actual transmission and distribution operation and maintenance expenditures in total and detailed by the EDC's own functional account code or FERC account code as available.***

The following table provides the operation and maintenance (O&M) expenses for PPL Electric, as a whole, which includes the work identified in response to Item (6).

Activity	3rd Quarter		Year-to-date	
	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
Provide Electric Service	1,457	1,594	3,799	5,035
Vegetation Management	15,030	8,239	40,807	35,425
Customer Response	18,366	15,083	44,241	47,265
Reliability Maintenance	9,008	8,875	26,678	29,782
System Upgrade	717	3,022	(1,208)	7,331
Customer Service/Accounts	32,289	30,741	94,905	80,396
Others	8,760	8,544	27,977	29,626
Total O&M Expenses	**85,628**	**76,098**	**237,199**	**234,860**

*8) **Quarterly and year-to-date information on budgeted versus actual transmission and distribution capital expenditures in total and detailed by the EDC's own functional account code or FERC account code as available.***

The following table provides the capital expenditures for PPL Electric, as a whole, which includes transmission and distribution ("T&D") activities.

Activity	3rd Quarter		Year-to-date	
	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
New Service/Revenue	19,479	23,435	55,041	65,921
System Upgrade	177,726	173,122	484,412	474,033
Reliability & Maintenance	113,777	120,740	330,141	326,978
Customer Response	4,637	3,162	8,744	10,540
Other	1,743	2,686	10,483	10,721
Total	**317,361**	**323,144**	**888,822**	**888,192**

9) Quarterly and year-to-date information on distribution substation inspections and reliability metrics.

(a) The Number of Corrective Work Orders by Type (Low-Priority, Mid-Priority, Urgent)

During the third quarter of 2017, 74 corrective work orders were created with the following breakdown by priority.

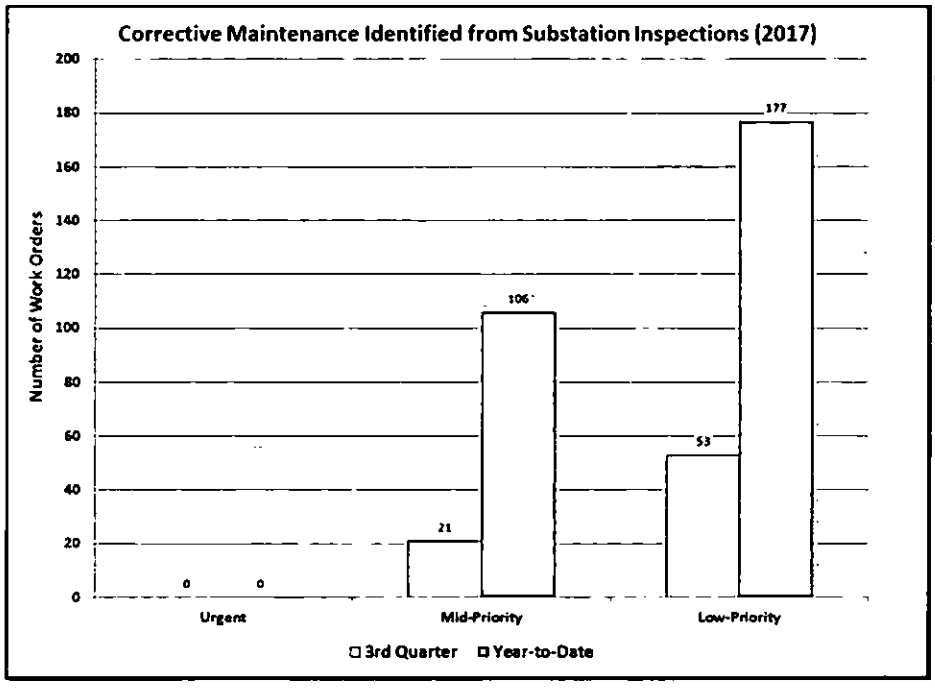


Figure 1: Corrective Maintenance Work Orders by Priority Level for third quarter and year-to-date 2017

(b) The Amount Spent on Substation Inspections

During the third quarter of 2017, PPL Electric spent approximately $320,000 on substation inspections.

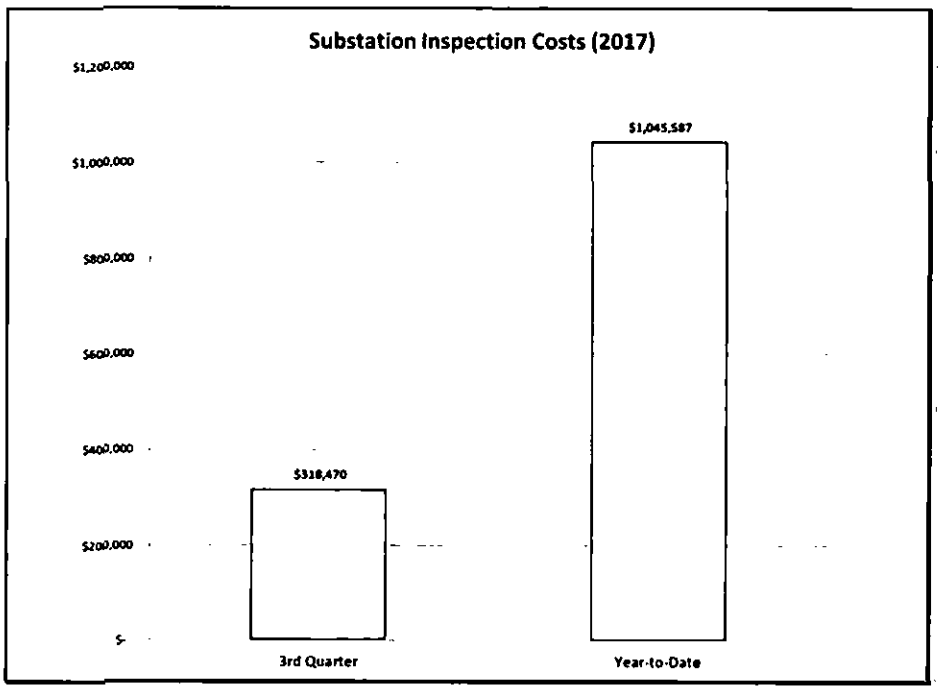


Figure 2: Substation Inspection Costs for third quarter and year-to-date 2017.

(c) The Amount Spent on Vegetation Management

Please refer to Section 7 for vegetation management expenses, for the third quarter and year-to-date.

(d) The Projected CMI Avoidance Due to Substation Inspections

The figure below shows the amount that PPL Electric has the estimted CMI avoidance, for the third quarter and year-to-date. During third quarter of 2017, PPL Electric performed this follow-up work, and has potential avoided approximately 111,000 CMI on the distribution system..

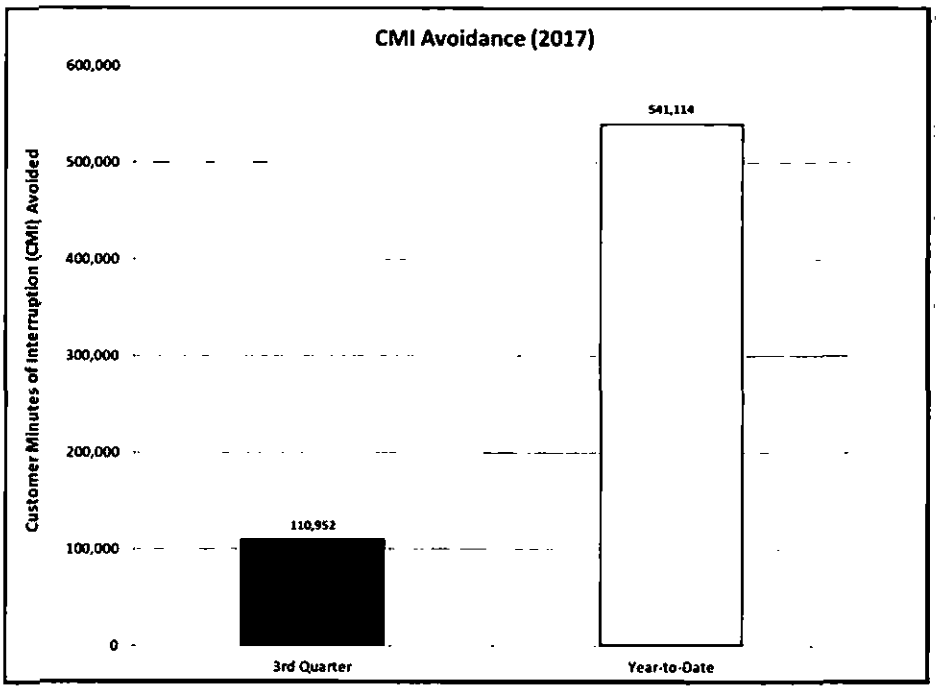


Figure 3: CMI Avoidance Due to Inspections for third quarter and year-to-date 2017

(e) Customer Minutes and Number of Customers Affected Due to Substation Sustained Outages

In the past three years, distribution substations have contributed a small amount toward the reliability metrics. During the third quarter of 2017, the Company interrupted approximately 9,677 customers for a total of approximately 221,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.

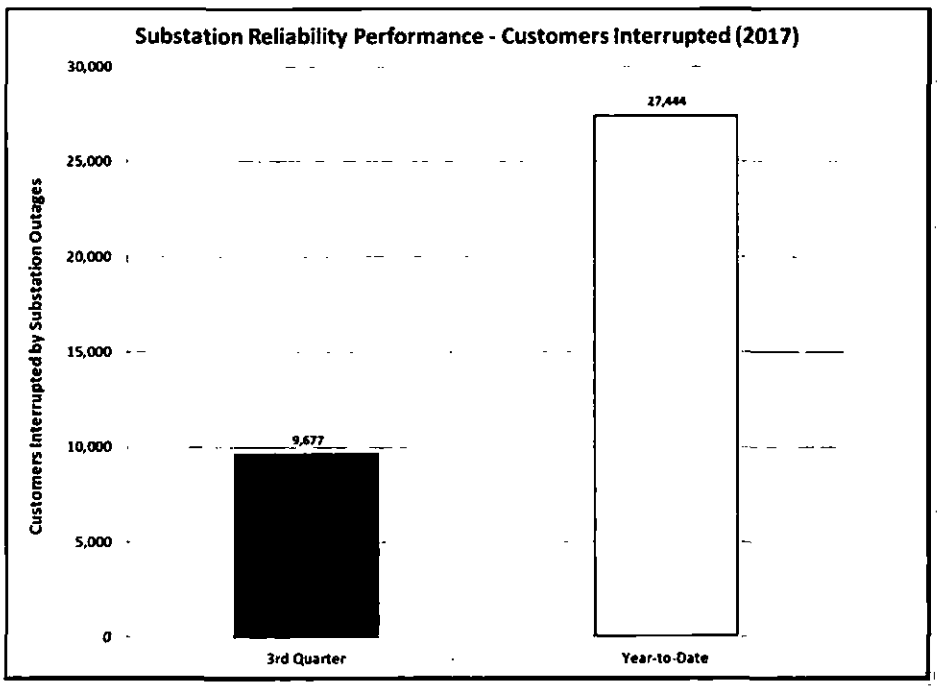


Figure 4: Substation Customers Interrupted for third quarter and year-to-date 2017

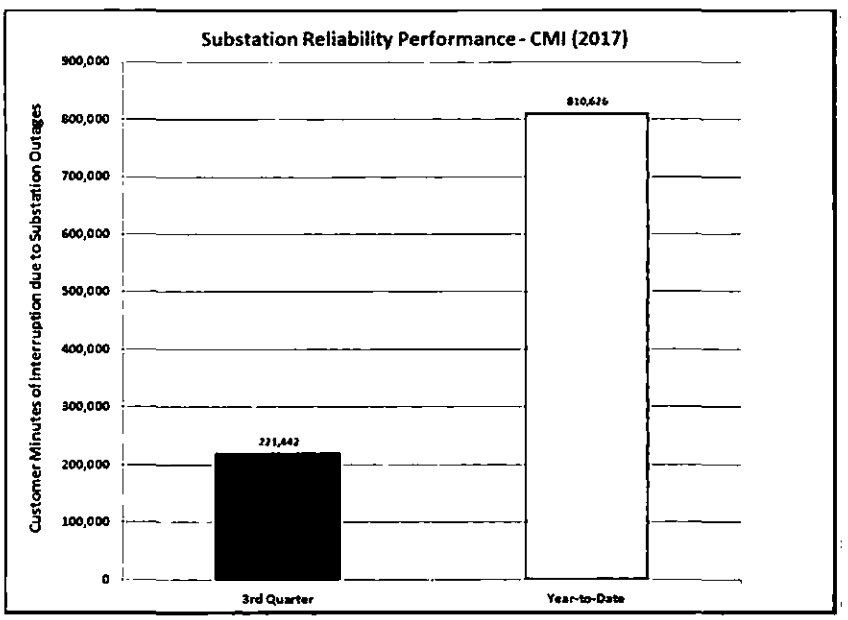


Figure 5: Substation Customer Minutes of Interruption for third quarter and year-to-date 2017

(f) Substation SAIFI Contribution

Overall, substation outages have contributed to around 4.1% of the total SAIFI experienced by PPL Electric customers in the third quarter of 2017. Historically, PPL Electric has ranked in the first quartile for Substation SAIFI performance on the Southeastern Electric Exchange (SEE) Survey, and is on-track to maintain its ranking among other electric utilities.

(g) Number of Substations with Remote Monitoring and Communication Technologies

PPL Electric has the capability of remotely monitoring its distribution substations through SCADA installations and through other telemetered equipment. This equipment allows PPL Electric to closely track the performance of its substation assets and respond to any trouble that is experienced on the distribution system. The table below shows the number of distribution substations that have this functionality.

	3rd Quarter	Year-to-Date
Substations with Remote Monitoring	351	351
Total Number of Substations	353	353

PPL Electric has launched a project to install smart relaying onto all 12kV circuit breakers at its Distribution substations. These relays will allow the company to quickly perform automated switching for lesser system impact during an outage event, and better-estimate fault locations for quicker system restoration. By 2022, the Company expects all 12kV circuit breakers to have these functionalities in order to enhance reliability performance.

10) Dedicated staffing levels for transmission and distribution operation and maintenance at the end of the quarter, in total and by specific category (for example, linemen, technician and electrician).

The following table shows the dedicated staffing levels as of the end of the quarter. Job descriptions are provided in Appendix B.

Transmission and Distribution(T&D)	
Lineman Leader	53
Journeyman Lineman	219
Journeyman Lineman-Trainee	28
Helper	12
Groundhand	3
Troubleman	53
T&D Total	368
Electrical	
Elect Leaders-UG	4
Elect Leaders-Net	10
Elect Leaders-Sub	23
Journeyman Elect-UG	18
Journeyman Elect-Net	34
Journeyman Elect-Sub	61
Journeyman Elect Trainee-UG	0
Journeyman Elect Trainee-Net	0
Journeyman Elect Trainee-Sub	14
Helper	0
Laborer-Network	0
Laborer-Substation	0
Electrical Total	164
Overall Total	532

Appendix A

PPL Electric Utilities Corporation

Worst Performing Circuit Definition / Comparison under old and new Circuit Performance Index (CPI) formulas.

PPL Electric uses total Customer Minutes Interrupted (CMI) during the previous four quarters to define the worst performing circuits on its system. Major events and pre-arranged outages are excluded. This ranking system was put in place as of the second quarter of 2013, for the following reasons:

- It focuses remediation efforts where they will have the greatest customer impact. Small pockets of customers with multiple interruptions are addressed under the CEMI (Customers Experiencing Multiple Interruptions) program, which is adequately funded to remediate these smaller customer groups.
- It identifies the circuits contributing the most to system SAIDI.
- It is simple and transparent, therefore allowing WPCs to be identified and remediated on a short timetable.

Appendix B

PPL Electric Utilities Corporation

Job Descriptions

Transmission and Distribution

Groundhand	• Performs manual labor and assists employees in higher job classifications.
Helper	• Performs semi-skilled labor at any work location on de-energized overhead and underground transmission, and distribution facilities to prepare the employee for entrance into the Journeyman Lineman Apprenticeship Program.
Journeyman Lineman	• Works alone or as part of a crew on the maintenance, operation, and construction activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.
Journeyman Lineman-Trainee	• Works alone or as part of a crew on the maintenance, operation, and construction activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.
Lineman Leader	• Responsible for completing assigned work by directing one or multiple groups of employees involved in the maintenance, operation, and construction activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities. • Engage in and perform work along with providing the necessary leadership, all-around knowledge, initiative, judgment, and experience to produce a quality job. • Performs all the direct duties of the Journeyman Lineman when not acting as a Lineman Leader.
Troubleman	• Investigates and resolves trouble calls, voltage abnormalities on transmission and distribution systems associated with, but not limited to, PPL Electric facilities.

Electrical

Electrician Leader - Substation - Network - Underground	• Responsible for completing assigned work by directing one or multiple groups of employees involved in the construction and maintenance activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities. • Engage in and perform work along with providing the necessary leadership, all-around knowledge, initiative, judgment, and experience to produce a quality job. • Performs all direct duties of the Journeyman Electrician when not acting as a leader.
Helper - Substation - Network - Underground	• Performs manual labor at any work location including those areas containing non-exposed energized electrical equipment, and to prepare the employee for entrance into the Apprenticeship Program.
Laborer - Substation - Network - Underground	• Performs manual labor and assists employees in higher job classifications.
Journeyman Electrician - Substation - Network - Underground	• Normally under limited supervision performs and is responsible for work associated with, but not limited to, PPL Electric facilities involving the highest degree of skill in construction and maintenance work associated with substations, LTN or underground distribution and transmission. • Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the field services electrical discipline.

Journeyman Electrician - Trainee - Substation - Network - Underground	• Normally under limited supervision performs and is responsible for work associated with, but not limited to, PPL Electric facilities involving the highest degree of skill in construction and maintenance work associated with substations, LTN or underground distribution and transmission. • Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the field services electrical discipline.

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