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FEDERAL EXPRESS

April 29, 2016

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

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APR 29 2016

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

**Re: PPL Electric Utilities Corporation
Quarterly Reliability Report for the
Period Ended March 31, 2016
Docket No. E-00030461**

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 March 31, 2016. 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 April 29, 2016, 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.

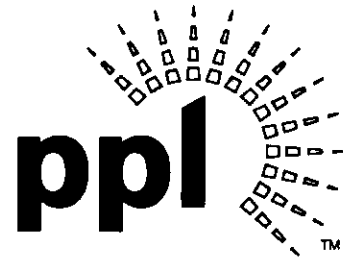
If you have any questions regarding this document, please call me or B. Kathryn Frazier, PPL Electric's Regulatory Affairs Manager at (610) 774-3372.

Very truly yours,

Paul E. Russell

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

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May 2016

APR 29 2016

**PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU**

- 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 first quarter of 2016.

- 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 March 31, 2016.

SAIFI (Benchmark = 0.98; Rolling 12-month Std. = 1.18)	0.75
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	124
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	92
MAIFI ¹	5.2
Average Number of Customers Served ²	1,407,814
Number of Sustained Customer Interruptions (Trouble Cases)	16,379
Number of Customers Affected ³	1,048,934
Customer Minutes of Interruptions (CMI)	130,202,050
Number of Customer Momentary Interruptions	7,336,825

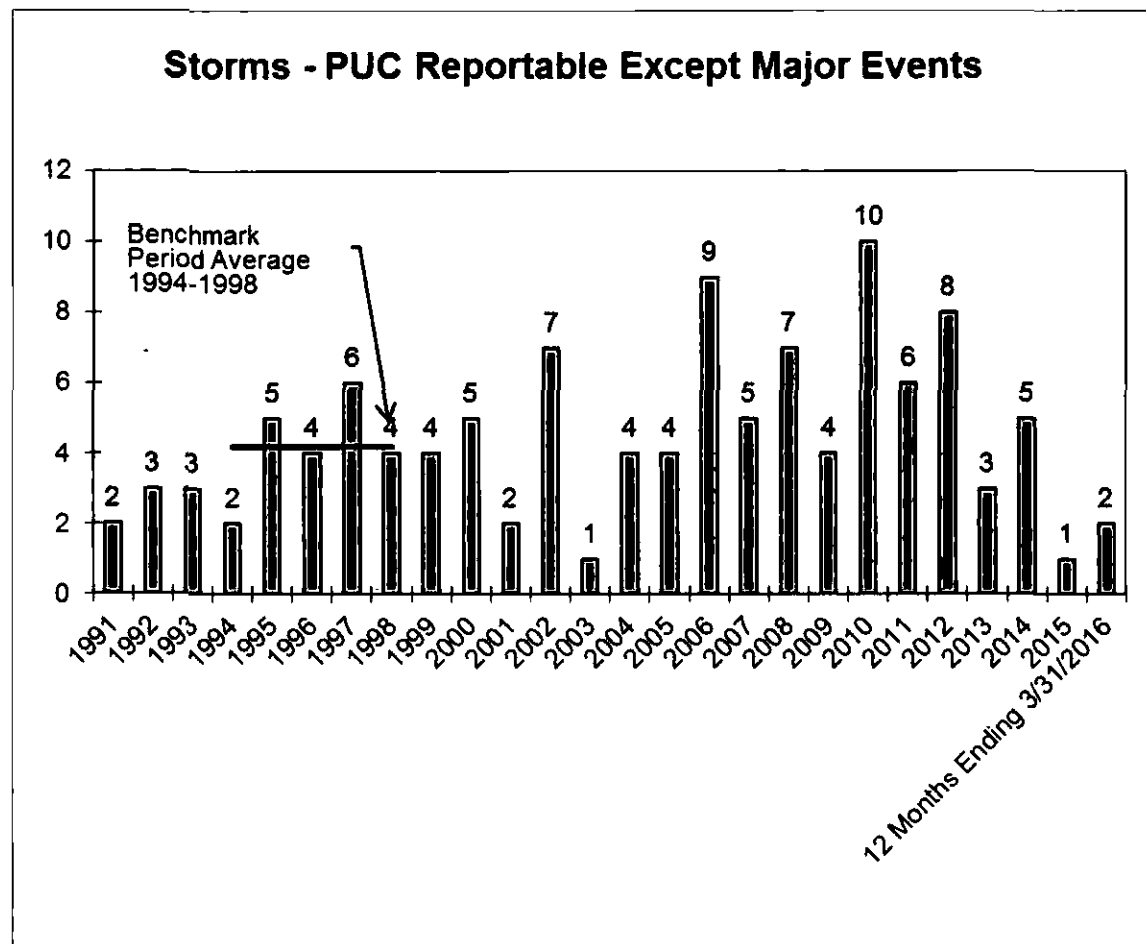
During the first quarter, there were no (0) PUC major events, one (1) PUC reportable storm, and four (4) other storms that required the opening of one or more area emergency centers to manage restoration efforts.

¹ MAIFI data is obtained at the substation breaker level and at certain reclosers.

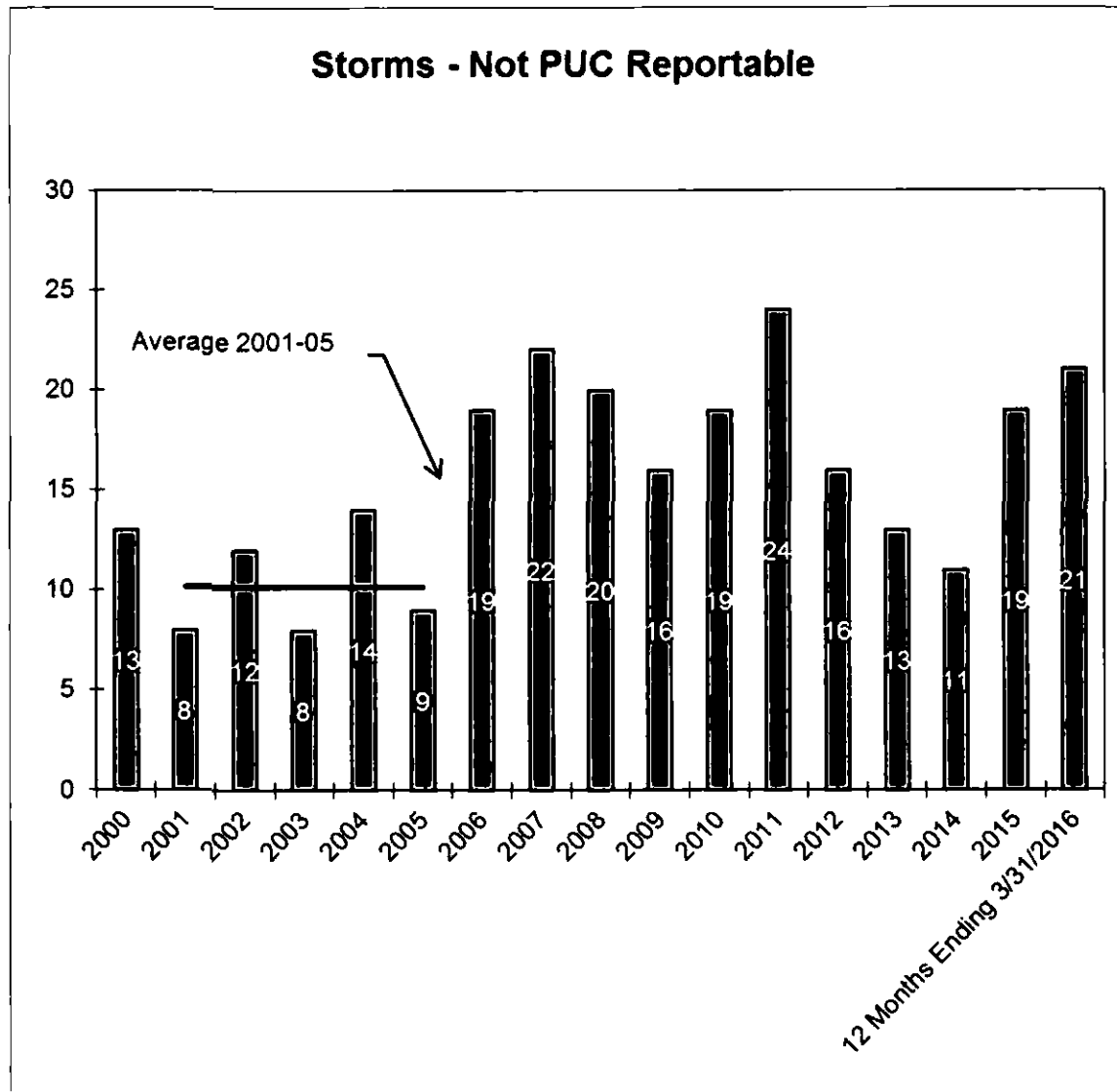
² PPL Electric calculates the annual indices using customers served at the end of period. This is consistent with the method used to calculate PPL Electric's benchmarks.

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.

Specifically, during the 12-month reporting period, there were no (0) PUC major events and two (2) PUC-reportable storms ($\geq 2,500$ customers interrupted for ≥ 6 hours) other than major events.



In addition, there were twenty one (21) 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	27101	1347	506	2.66	6.57	1843	44	2,482,655
2	14403	477	131	3.64	6.88	2542	44	1,213,363
3	61801	639	241	2.65	17.65	1609	44	1,027,751
4	45602	635	359	1.77	12.04	1612	52	1,023,941
5	46001	409	356	1.15	2.40	2355	40	963,861
6	21206	382	146	2.61	6.48	2499	12	953,622
7	13102	1287	195	6.59	3.10	718	10	923,900
8	64201	492	102	4.83	13.43	1850	27	909,724
9	11102	417	309	1.35	3.21	1987	21	828,745
10	47001	326	156	2.09	5.37	2498	61	813,444
11	14501	432	134	3.22	1.00	1877	18	810,288
12	59101	430	197	2.19	5.79	1713	43	737,369
13	29502	928	149	6.21	3.12	783	35	726,326
14	10705	276	156	1.77	4.28	2623	30	723,986
15	42201	413	116	3.54	5.02	1725	29	711,968
16	20403	365	96	3.79	11.74	1906	32	694,766
17	16102	323	164	1.97	5.67	2127	24	687,348
18	16101	459	146	3.16	17.37	1477	40	678,557
19	65202	238	100	2.38	1.10	2812	8	670,207
20	52403	529	172	3.08	6.68	1253	50	662,901
21	22201	54917	363	151.33	4.00	12	3	659,007
22	25801	358	149	2.39	5.84	1820	48	651,115
23	13105	267	154	1.74	0.58	2370	17	632,406
24	42401	869	306	2.84	7.23	723	25	628,105
25	24602	416	123	3.38	2.04	1508	49	626,589

WRC Rank	Router ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
26	16801	388	117	3.32	5.71	1609	34	624,752
27	12701	401	129	3.12	11.07	1534	56	615,878
28	67401	446	626	0.71	12.71	1364	37	608,688
29	66504	324	104	3.11	15.43	1876	23	608,656
30	65603	245	145	1.69	4.87	2465	37	604,665
31	28604	333	195	1.71	7.73	1796	44	597,332
32	22901	272	132	2.05	2.02	2180	11	592,319
33	44301	287	390	0.74	6.57	2047	51	587,465
34	22805	246	240	1.03	7.38	2367	7	583,372
35	53602	260	121	2.15	14.47	2201	48	573,315
36	27403	229	100	2.28	10.29	2448	11	559,701
37	20102	386	90	4.31	4.42	1438	15	554,479
38	40201	333	178	1.86	7.50	1649	61	548,470
39	44904	680	130	5.23	2.62	805	19	547,723
40	10702	285	383	0.74	1.00	1844	15	524,997
41	59002	233	101	2.30	14.95	2251	51	524,519
42	16204	406	407	1.00	5.24	1286	17	522,320
43	10903	302	122	2.47	8.15	1708	28	515,636
44	67804	253	86	2.95	10.80	2031	14	513,698
45	16504	222	139	1.60	7.06	2200	37	488,795
46	28301	211	161	1.31	11.54	2261	91	476,001
47	27502	159	273	0.58	3.79	2920	15	462,999
48	52402	276	132	2.09	0.99	1664	61	459,237
49	41801	535	245	2.18	4.01	833	29	445,776
50	67502	235	179	1.31	6.02	1890	24	444,420
51	17802	231	213	1.08	9.06	1904	57	438,922
52	42601	202	149	1.36	10.73	2155	19	435,017
53	26703	231	356	0.65	10.02	1882	64	434,916
54	23504	403	242	1.66	6.53	1064	6	428,833
55	13103	172	96	1.79	4.21	2484	9	426,953
56	44902	251	157	1.60	24.06	1692	30	424,630
57	28803	324	261	1.24	9.08	1306	37	423,371
58	43202	358	120	2.98	6.12	1173	36	419,636
59	45501	291	160	1.83	7.65	1429	36	416,452
60	64502	214	199	1.08	1.67	1935	12	414,295
61	46504	210	149	1.41	0.00	1952	29	410,141
62	55002	159	102	1.56	3.78	2558	66	407,010

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

01 Circuit 27101 -- GREENFIELD 71-01

Performance Analysis

The GREENFIELD 71-01 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 27, 2015, during a period of strong wind, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 4,242 customers for up to 1,271 minutes resulting in 2,299,760 CMI.

In total, the GREENFIELD 71-01 circuit had 44 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (15); tree related (14); animal contacts (11); nothing found (2); other (2).

Remedial Actions

- In 2015, a section of difficult-to-access three-phase line was moved to a more accessible location.
- In 2015, full circuit tree trimming was performed.
- In 2015, single-phase fuses were added in multiple locations.
- In 2016, an Extended Operational Review will be completed.
- In 2017, two sections of difficult-to-access three-phase line will be moved to more accessible locations.
- In 2020, a new tie line is planned between EYNON 16-01 and GREENFIELD 71-01.

02 Circuit 14403 -- SOUTH SLATINGTON 44-03

Performance Analysis

The SOUTH SLATINGTON 44-03 circuit experienced four outages of over 100,000 CMI between April 2015 and March 2016.

On July 1, 2015, an equipment failure occurred on a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 2,543 customers for up to 782 minutes resulting in 300,110 CMI.

On September 12, 2015, a vehicle contact occurred causing a circuit breaker to trip to lockout. This outage affected 2,541 customers for up to 798 minutes resulting in 354,302 CMI.

On October 28, 2015, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 637 customers for up to 167 minutes resulting in 105,907 CMI.

On March 28, 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 888 customers for up to 472 minutes resulting in 148,561 CMI.

In total, the SOUTH SLATINGTON 44-03 circuit had 44 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (19); equipment failure (9); nothing found (7); animal contacts (6); other (2); vehicles (1).

Remedial Actions

- In 2015, a single-phase tap was reviewed and a broken cross arm was repaired.
- In 2015, several spans of conductor having excess slack were repaired to prevent the conductors from coming together due to wind.
- In 2015, additional fuses and solid blade disconnects were installed.

- In 2015 a line inspection was performed and a number of minor improvements were identified for remediation in 2016.
- In 2016, two large single-phase taps will be reviewed for improved sectionalizing.
- In 2016, two additional fusing opportunities will be investigated.
- In 2016, the circuit will receive hotspot tree trimming.
- In 2016, Fault Isolation and System Restoration (FISR) will be activated on this circuit.
- In 2018, full circuit trimming will be performed.
- In 2018, two sections of difficult-to-access conductor will be relocated to more accessible locations.

03 Circuit 61801 -- EAST ELIZABETHTOWN 18-01

Performance Analysis

The EAST ELIZABETHTOWN 18-01 circuit experienced three outages of over 100,000 CMI between April 2015 and March 2016.

On May 18, 2015, 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 1,596 customers for up to 924 minutes resulting in 606,838 CMI.

On June 23, 2015, 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 1,598 customers for up to 266 minutes resulting in 156,547 CMI.

On January 25, 2016, an equipment failure occurred on an overhead splice causing a circuit breaker to trip to lockout. This outage affected 744 customers for up to 479 minutes resulting in 203,691 CMI.

In total, the EAST ELIZABETHTOWN 18-01 circuit had 44 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (21); tree related (11); animal contacts (6); other (4); nothing found (1); vehicles (1).

Remedial Actions

- In 2015, all aluminum crimps on copper conductor were replaced on three-phase lines.
- In 2016, an additional sectionalizing device will be installed in a heavily wooded area.
- In 2016 and 2017, single-phase fuses will be added in multiple locations.
- In 2016, a section of single-phase line will be evaluated for re-sourcing.
- In 2016, a tie line will be built between EAST ELIZABETHTOWN 18-01 and RHEEMS 60-01 lines.
- In 2016, a project will be developed to re-conductor 1.5 miles of copper conductor.
- In 2017, a manual switch will be replaced with an automated vacuum recloser as part of the Smart Grid initiative.

04 Circuit 45602 -- WOOLRICH 56-02

Performance Analysis

The WOOLRICH 56-02 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On September 9, 2015, a vehicle made contact with a pole causing an interruption. This outage affected 815 customers for up to 606 minutes resulting in 493,890 CMI.

In total, the WOOLRICH 56-02 circuit had 52 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (31); equipment failure (11); animal contacts (6); nothing found (3); vehicles (1).

Remedial Actions

- In 2015, an Expanded Operational Review was performed in on this circuit. As a result minor repairs were performed at five locations.
- In 2016, hazard tree removal and hotspot trimming was completed.
- In 2016, 13 locations will be fused.

- In 2016 and 2017, two Smart Grid devices will be added to this circuit as part of the Smart Grid Initiative.
- In 2017, full circuit tree trimming will be performed.

05 Circuit 46001 -- BERWICK 60-01

Performance Analysis

The BERWICK 60-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 27, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 946 customers for up to 501 minutes resulting in 470,327 CMI.

On December 30, 2015, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 949 customers for up to 546 minutes resulting in 262,392 CMI.

In total, the BERWICK 60-01 circuit had 40 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (15); animal contacts (9); equipment failure (8); vehicles (5); nothing found (3).

Remedial Actions

- In 2015, one new remotely operable sectionalizing device was added and one hydraulic switch was replaced with a recloser.
- In 2016, full circuit tree trimming will be performed.
- In 2017, a project to improve the reliability for customers that have experienced multiple interruptions is scheduled.
- In 2017, two new remotely operable sectionalizing devices will be added to this circuit.

06 Circuit 21206 -- EAST CARBONDALE 12-06

Performance Analysis

The EAST CARBONDALE 12-06 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On August 28, 2015, an improper operation occurred causing a recloser to trip to lockout. This outage affected 1,823 customers for up to 257 minutes resulting in 243,392 CMI.

On September 22, 2015, an equipment failure occurred on an overhead splice causing a circuit breaker to trip to lockout. This outage affected 2,500 customers for up to 263 minutes resulting in 500,030 CMI.

In total, the EAST CARBONDALE 12-06 circuit had 12 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (10); animal contacts (1); Improper Design (1).

Remedial Actions

- In 2015, full circuit trimming was performed.
- In 2015, an Expanded Operation Review was performed.
- In 2015, a tap fuse was added to increase reliability.
- In 2016, aging dead ends and switches will be replaced.
- In 2016, fault indicators will be installed on an underground residential development to allow for faster fault location and restoration.
- In 2016, a tie line between the EAST CARBONDALE 12-06 and EAST CARBONDALE 12-02 lines will be investigated.
- In 2016, automated switching by the FISR computer system will go live on this circuit.
- In 2016, adding a single-phase trip, single-phase lockout device to this circuit will be evaluated.

07 Circuit 13102 -- NORTHAMPTON 31-02

Performance Analysis

The NORTHAMPTON 31-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On February 25, 2016, 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 1,470 customers for up to 167 minutes resulting in 245,254 CMI.

On March 7, 2016, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,250 customers for up to 413 minutes resulting in 591,390 CMI.

In total, the NORTHAMPTON 31-02 circuit had 10 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (4); animal contacts (2); tree related (2); other (1); vehicles (1).

Remedial Actions

- In 2016, FISR was added to this circuit.
- In 2016, full circuit trimming will be performed.
- In 2016, adding fusing or adding disconnects on several three-phase taps will be evaluated.
- In 2016, replacing an existing automated switch with a Smart Grid device will be evaluated.

08 Circuit 64201 -- KINZER 42-01

Performance Analysis

The KINZER 42-01 circuit experienced four outages of over 100,000 CMI between April 2015 and March 2016.

On June 23, 2015, during a period of strong wind, a tree made contact with an overhead switch causing a circuit breaker to trip to lockout. This outage affected 1,867 customers for up to 283 minutes resulting in 316,302 CMI.

On June 23, 2015, during a period of strong wind, an animal interfered with an overhead switch causing a circuit breaker to trip to lockout. This outage affected 659 customers for up to 233 minutes resulting in 153,553 CMI.

On December 27, 2015, 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 771 customers for up to 223 minutes resulting in 103,855 CMI.

On January 28, 2016, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 770 customers for up to 444 minutes resulting in 133,752 CMI.

In total, the KINZER 42-01 circuit had 27 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (11); tree related (6); vehicles (4); animal contacts (3); nothing found (2); other (1).

Remedial Actions

- In 2015, a recloser was replaced with an automated vacuum recloser with additional animal guarding.
- In 2015, a tie line was built between the KINZER 42-01 line and the KINZER 42-02.
- In 2016, a new sectionalizing device will be installed on this circuit.

- In 2017, single-phase fuses will be added in multiple locations.
- In 2017, a manual switch will be replaced with an automated vacuum recloser as part of the Smart Grid initiative.

09 Circuit 11102 -- EGYPT 11-02

Performance Analysis

The EGYPT 11-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 30, 2015, 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 1,978 customers for up to 722 minutes resulting in 586,860 CMI.

On June 30, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 154 customers for up to 1,165 minutes resulting in 156,265 CMI.

In total, the EGYPT 11-02 circuit had 21 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (9); tree related (6); animal contacts (3); vehicles (2); other (1).

Remedial Actions

- In 2015, an Expanded Operational Review identified minor issues, all of which have been remediated.
- In 2016, full circuit tree trimming was performed.
- In 2016, additional three-phase fusing will be added at three locations.
- In 2017, two additional sectionalizing devices with remote operational capability will be installed as part of the Smart Grid Initiative.
- In 2016, FISR was added to this circuit.

- In 2016, changing a remotely operable switch to a remotely operable recloser will be investigated.

10 Circuit 47001 -- HUGHESVILLE 70-01

Performance Analysis

The HUGHESVILLE 70-01 circuit experienced three outages of over 100,000 CMI between April 2015 and March 2016.

On May 27, 2015, an animal interfered with a substation component causing a circuit breaker to trip to lockout. This outage affected 2,482 customers for up to 166 minutes resulting in 336,951 CMI.

On June 27, 2015, an improper operation occurred on an overhead switch. This outage affected 827 customers for up to 785 minutes resulting in 115,928 CMI.

On August 4, 2015, an improper operation occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 827 customers for up to 345 minutes resulting in 200,027 CMI.

In total, the HUGHESVILLE 70-01 circuit had 61 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (24); equipment failure (14); animal contacts (12); nothing found (7); Improper Operation (3); other (1).

Remedial Actions

- In 2015, a normally open switch between the HUGHESVILLE 70-01 and HUGHESVILLE 70-02 circuits was upgraded to a device with remote operational capability as part of the Smart Grid Initiative.
- In 2015, the underground getaway for this circuit was proactively replaced.
- In 2015, animal guarding was installed at the HUGHESVILLE substation.

- In 2015, a project that will increase the load that can be transferred from the HUGHESVILLE 70-01 to the MILLVILLE 32-02 was completed. Approximately 8,500 feet of larger capacity conductor was installed on the MILLVILLE 32-02.
- In 2015, additional 69kV transmission switches were installed to allow the HUGHESVILLE 69kV transmission tap to be fed by either the CLINTON – MUNCY #1 69kV transmission line or the CLINTON – MUNCY #2 69kV transmission line.
- In 2016, fuses will be added to protect the three-phase backbone.
- In 2016, full circuit tree trimming will be performed.
- In 2016, fuses will be added to protect the three-phase backbone, and series fusing will be added at one location.
- In 2017, a project is planned to build one mile of new single-phase and remove one mile of difficult-to-access copper conductor.
- In 2017, a new manually operable switch will be installed to allow line crews to transfer the HUGHESVILLE 70-01 to the HUGHESVILLE 70-02 should the HUGHESVILLE 70-01 circuit breaker or getaway fail.
- In 2018, a project is planned to build 2,500 feet of new single-phase line.

11 Circuit 14501 -- SCHOENECK 45-01

Performance Analysis

The SCHOENECK 45-01 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 8, 2015, 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 1,867 customers for up to 1,120 minutes resulting in 428,768 CMI.

In total, the SCHOENECK 45-01 circuit had 18 outages between April 2015 and March 2016, with the causes breaking down as follows: nothing found (5); tree related (5); animal contacts (4); equipment failure (4).

Remedial Actions

- In 2015, an Expanded Operational Review was completed.
- In 2015, fault indicators were installed on this circuit.
- In 2016, a problematic device was removed from this circuit.
- In 2016, one location will be evaluated for three-phase fusing.
- In 2016, a large project will be completed at the SCHOENECK Substation. This project involves installation of two new lines and an additional transformer and transmission source. One of the new lines will split the SCHOENECK 45-01 line into two separate lines, reducing outage exposure. Additionally, the SCHOENECK 45-01 and the new line will receive sectionalizing devices with remote operational capability.
- In 2016, full circuit tree trimming will be performed.
- In 2016, FISR will be added to this circuit.

12 Circuit 59101 -- WALKER 91-01

Performance Analysis

The WALKER 91-01 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 8, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,117 customers for up to 1,491 minutes resulting in 506,301 CMI.

In total, the WALKER 91-01 circuit had 43 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (21); equipment failure (14); nothing found (3); animal contacts (2); vehicles (2); other (1).

Remedial Actions

- In 2016, two single-phase fusing locations have been identified and will be installed.
- In 2017, full circuit trimming will be performed.
- In 2018, two sectionalizing devices are scheduled to be installed as part of the Smart Grid initiative.

13 Circuit 29502 -- LEDGEDALE 95-02

Performance Analysis

The LEDGEDALE 95-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On October 28, 2015, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,944 customers for up to 134 minutes resulting in 202,789 CMI.

On October 29, 2015, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,941 customers for up to 386 minutes resulting in 402,133 CMI.

In total, the LEDGEDALE 95-02 circuit had 35 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (14); animal contacts (9); nothing found (6); equipment failure (3); other (3).

Remedial Actions

- In 2016, multiple VCR controllers are being upgraded with new controls.
- In 2016, additional tap fusing is being evaluated.
- In 2016, series fusing is being evaluated at several locations.
- In 2016, additional animal guarding locations are being evaluated for this circuit.

- In 2017, additional tap fusing will be installed.
- In 2018, a tie is being automated to improve reliability.

14 Circuit 10705 -- CATASAUQUA 07-05

Performance Analysis

The CATASAUQUA 07-05 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 30, 2015, 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 2,616 customers for up to 156 minutes resulting in 384,734 CMI.

On July 1, 2015, during a period of strong wind, a tree made contact with an overhead fuse causing a load break fuse to operate. This outage affected 188 customers for up to 570 minutes resulting in 107,052 CMI.

In total, the CATASAUQUA 07-05 circuit had 30 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (15); equipment failure (10); animal contacts (2); vehicles (2); other (1).

Remedial Actions

- In 2015, full circuit trimming was performed.
- In 2016, six single-phase taps will be fused.
- In 2016, two additional three-phase Smart Grid devices were installed as part of the Smart Grid Initiative.
- In 2016, FISR was activated on this circuit.
- In 2016, four additional single-phase fusing opportunities will be evaluated.

15 Circuit 42201 -- SHENANDOAH 22-01

Performance Analysis

The SHENANDOAH 22-01 circuit experienced three outages of over 100,000 CMI between April 2015 and March 2016.

On April 21, 2015, during a period of heavy rain, an equipment failure occurred on a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,020 customers for up to 712 minutes resulting in 294,149 CMI.

On October 28, 2015, during a period of heavy rain, a rogue blimp caused an issue with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,724 customers for up to 66 minutes resulting in 113,473 CMI.

On November 11, 2015, an equipment failure occurred on an overhead switch causing a recloser to trip to lockout. This outage affected 1,026 customers for up to 608 minutes resulting in 176,378 CMI.

In total, the SHENANDOAH 22-01 circuit had 29 outages between April 2015 and March 2016, with the causes breaking down as follows: animal contacts (10); tree related (8); equipment failure (7); other (2); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2015, additional fusing was installed on several three-phase taps.
- In 2016, additional fusing was installed on a single-phase tap.
- In 2016, animal guarding installations will be evaluated at multiple locations.
- In 2017, a new manual switch will be installed on a section of single and three-phase line.
- In 2017, full circuit tree trimming will be performed.

16 Circuit 20403 -- ASHFIELD 04-03

Performance Analysis

The ASHFIELD 04-03 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On May 10, 2015, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 1,857 customers for up to 204 minutes resulting in 105,494 CMI.

On February 24, 2016, 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 1,857 customers for up to 720 minutes resulting in 339,456 CMI.

In total, the ASHFIELD 04-03 circuit had 32 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (13); tree related (10); animal contacts (5); nothing found (2); vehicles (2).

Remedial Actions

- In 2014, full circuit tree trimming was performed.
- In 2015, single-phase fusing was installed in multiple locations.
- In 2016, feeding a long span of radial single-phase line from a different source will be investigated.
- In 2017, single-phase fusing will be installed in multiple locations.

17 Circuit 16102 -- BINGEN 61-02

Performance Analysis

The BINGEN 61-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 9, 2015, a vehicle contact occurred causing a circuit breaker to trip to lockout. This outage affected 2,002 customers for up to 91 minutes resulting in 105,785 CMI.

On February 24, 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 598 customers for up to 1,026 minutes resulting in 529,864 CMI.

In total, the BINGEN 61-02 circuit had 24 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (10); tree related (6); animal contacts (2); nothing found (2); other (2); vehicles (2).

Remedial Actions

- In 2016, FISR will be activated on this circuit.
- In 2016, three switches will be evaluated for upgrade to protective devices.
- In 2016, five locations will be evaluated for single-phase fusing.
- In 2016, fusing or disconnect switches will be evaluated for two three-phase locations.
- In 2016, transferring customers on a long single-phase radial tap to the Bingen 61-01 will be evaluated.

18 Circuit 16101 -- BINGEN 61-01

Performance Analysis

The BINGEN 61-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 14, 2015, during a period of strong wind, a tree made contact with an overhead fuse causing a circuit breaker to trip to lockout. This outage affected 2,921 customers for up to 781 minutes resulting in 411,463 CMI.

On June 25, 2015, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 940 customers for up to 273 minutes resulting in 146,563 CMI.

In total, the BINGEN 61-01 circuit had 40 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (16); animal contacts (11); equipment failure (10); vehicles (3).

Remedial Actions

- In 2014, five smart grid devices were installed on this circuit as part of the Smart Grid Initiative.
- In 2016, FISR will be activated on this circuit.
- In 2016, a single-phase tap that has experienced repeat interruptions will be reviewed for targeted tree trimming and additional sectionalizing.
- In 2016, a single-phase tap that has experience several tree related outages will be reconducted with heavier conductor.
- In 2016, additional animal guarding will be evaluated.
- In 2016, three locations will be evaluated for additional fusing or sectionalizing.
- In 2016, four locations will be evaluated for single-phase fusing.
- In 2017, a new automated tie switch will be installed as part of the Smart Grid Initiative.
- In 2018, a long three-phase tap will receive additional sectionalizing.

19 Circuit 65202 -- PRINCE 52-02

Performance Analysis

The PRINCE 52-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On November 13, 2015, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,804 customers for up to 170 minutes resulting in 275,967 CMI.

On November 14, 2015, during a period of strong wind, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 2,804 customers for up to 135 minutes resulting in 310,003 CMI.

In total, the PRINCE 52-02 circuit had eight outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (3); animal contacts (2); nothing found (2); other (1).

Remedial Actions

- In 2015, animal guarding was added to a vulnerable location.
- In 2016, all three-phase line protection schemes were evaluated.
- In 2016, the PRINCE 52-02 circuit breaker will be replaced.
- In 2016, five manual switches will be replaced with automated vacuum reclosers as part of the Smart Grid Initiative.
- In 2016, a tie line will be built between the PRINCE 52-02 line and the ENGLESIDE 26-06.
- In 2017, one manual switch will be replaced with an automated vacuum recloser, and one automated vacuum recloser will be added as part of the Smart Grid Initiative.
- In 2016, an Expanded Operational Review will be performed.

- In 2017, single-phase fuses will be added in multiple locations.

20 Circuit 52403 -- GREEN PARK 24-03

Performance Analysis

The GREEN PARK 24-03 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 8, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 457 customers for up to 224 minutes resulting in 102,080 CMI.

On June 8, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 97 customers for up to 1,216 minutes resulting in 118,704 CMI.

In total, the GREEN PARK 24-03 circuit had 50 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (26); equipment failure (9); animal contacts (7); nothing found (6); other (1); vehicles (1).

Remedial Actions

- In 2015, a roughly four mile tie line was constructed to provide customers with an alternate source for sectionalizing. As part of this project approximately two miles of conductor was relocated to a more accessible location.
- In 2015, a recloser was upgraded with a new communicating device as part of the Smart Grid Initiative.
- In 2015, an additional section of difficult-to-access single-phase line was relocated.
- In 2015, an Expanded Operational Review was performed and several pieces of equipment were replaced.
- In 2015, additional fusing was installed at several locations.

- In 2016, a broken transmission cross arm was replaced.
- In 2017, several additional locations will receive single-phase fusing.
- In 2018, full circuit trimming will be performed.

21 Circuit 22201 -- ELK MOUNTAIN 22-01

Performance Analysis

The ELK MOUNTAIN 22-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 27, 2015, 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 903 customers for up to 647 minutes resulting in 520,467 CMI.

On August 11, 2015, 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 906 customers for up to 210 minutes resulting in 138,089 CMI.

In total, the ELK MOUNTAIN 22-01 circuit had 3 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (3).

Remedial Actions

- In 2016, an Expanded Operation Review will be performed.
- In 2016, additional single-phase fusing will be installed.
- In 2018, full circuit trimming will be performed.

22 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On April 4, 2015, during a period of heavy rain, an equipment failure occurred on a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,818 customers for up to 486 minutes resulting in 179,226 CMI.

On December 29, 2015, 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 633 customers for up to 333 minutes resulting in 210,789 CMI.

In total, the SULLIVAN TRAIL 58-01 circuit had 48 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (27); equipment failure (10); animal contacts (9); nothing found (1); vehicles (1).

Remedial Actions

- In 2016, full circuit tree trimming will be performed.
- In 2016, a new sectionalizing device with remote operational capability will be installed on this circuit as part of the Smart Grid Initiative.
- In 2016, a manual switch will be replaced with a sectionalizing device with remote operational capability on this circuit as part of the Smart Grid Initiative.
- In 2016, two three-phase solid-blade disconnect switch installations are being evaluated for this circuit.
- In 2016, locations for fault indicators on the SULLIVAN TRAIL 58-01 line were identified to improve troubleshooting during outages.
- In 2017, three-phase fusing will be installed in multiple locations.

23 Circuit 13105 -- NORTHAMPTON 31-05

Performance Analysis

The NORTHAMPTON 31-05 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 30, 2015, during a period of strong wind, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 1,494 customers for up to 249 minutes resulting in 372,006 CMI.

On July 15, 2015, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 2,366 customers for up to 572 minutes resulting in 220,455 CMI.

In total, the NORTHAMPTON 31-05 circuit had 17 outages between April 2015 and March 2016, with the causes breaking down as follows: animal contacts (8); tree related (5); equipment failure (2); nothing found (1); vehicles (1).

Remedial Actions

- In 2016, three-phase taps will be investigated for fuses or load break disconnect switches.
- In 2016, several locations will be reviewed for single-phase fuses.
- In 2016, three new Smart Grid devices will be installed on the line allowing for remote sectionalizing and restoration.
- In 2016, additional animal guarding will be evaluated for a pocket of customers who have experienced several animal caused outages.

24 Circuit 42401 -- GIRARD MANOR 24-01

Performance Analysis

The GIRARD MANOR 24-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On October 28, 2015, during a period of heavy rain, a rogue blimp caused an issue with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 727 customers for up to 196 minutes resulting in 142,492 CMI.

On October 28, 2015, during a period of strong wind, a rogue blimp caused an issue with an overhead an overhead conductor causing a recloser to trip to lockout. This outage affected 1,072 customers for up to 1,090 minutes resulting in 435,964 CMI.

In total, the GIRARD MANOR 24-01 circuit had 25 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (7); animal contacts (6); tree related (6); nothing found (3); other (2); vehicles (1).

Remedial Actions

- In 2015, full circuit tree trimming was performed.
- In 2015, three-phase fusing was installed in one location.
- In 2016, an existing sectionalizing device will be automated as part of the Smart Grid Initiative.
- In 2016, an Expanded Operational Review will be performed.
- In 2016, a full substation rebuild will be performed.

25 Circuit 24602 -- VARDEN 46-02

Performance Analysis

The VARDEN 46-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On May 27, 2015, during a period of heavy rain, an equipment failure occurred on an overhead switch causing a recloser to trip to lockout. This outage affected 1,255 customers for up to 168 minutes resulting in 181,122 CMI.

On November 19, 2015, a vehicle contact occurred causing a recloser to trip to lockout. This outage affected 2,099 customers for up to 105 minutes resulting in 168,665 CMI.

In total, the VARDEN 46-02 circuit had 49 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (19); equipment failure (18); animal contacts (7); nothing found (3); vehicles (2).

Remedial Actions

- In 2015, two sectionalizing devices with remote operational capability were installed as part of the Smart Grid Initiative.
- In 2015, single-phase fuses were added in multiple locations.
- In 2015, multi-phase fusing was added.
- In 2015, a three-phase disconnect switch was added.
- In 2016, a line inspection will be completed.
- In 2016, a section of single-phase line will be relocated to a more accessible location.
- In 2016, multi-phase fusing will be evaluated.
- In 2017, a sectionalizing device with remote operational capability will be installed as part of the Smart Grid Initiative.

26 Circuit 16801 -- WAGNERS 68-01

Performance Analysis

The WAGNERS 68-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 27, 2015, 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 1,609 customers for up to 247 minutes resulting in 232,453 CMI.

On August 19, 2015, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,608 customers for up to 95 minutes resulting in 152,052 CMI.

In total, the WAGNERS 68-01 circuit had 34 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (20); equipment failure (12); animal contacts (1); nothing found (1).

Remedial Actions

- In 2015, single-phase fuses were added in multiple locations.
- In 2015, a switch was reprogrammed to act as a protective device.
- In 2015, the WAGNERS substation was upgraded to improve reliability and make the substation less susceptible to transmission outages.
- In 2016, single-phase fuses will be added in multiple locations.
- In 2017, additional single-phase reclosers will be added to this circuit.
- In 2019, a new line and terminal project is planned which will reduce exposure and customer counts on this circuit.

27 Circuit 12701 -- MACUNGIE 27-01

Performance Analysis

The MACUNGIE 27-01 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On September 1, 2015, a vehicle contact occurred causing a transformer to be interrupted. This outage affected 1,421 customers for up to 549 minutes resulting in 171,428 CMI.

In total, the MACUNGIE 27-01 circuit had 56 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (19); tree related (17); animal contacts (9); vehicles (6); nothing found (4); other (1).

Remedial Actions

- In 2015, full circuit tree trimming was performed.
- In 2016, a new reliability substation in Zionsville will be constructed to split the MACUNGIE 27-01 and reduce customer outage exposure. Additional remote sectionalizing devices will also be installed.
- In 2016, a Smart Grid device will be installed on this circuit.
- In 2016, several poles that have multiple vehicle strikes will be evaluated for relocation.
- In 2016, additional fusing at two single-phase taps will be evaluated.
- In 2018, a section of three-phase conductor will be relocated to a more accessible location.

28 Circuit 67401 -- WAKEFIELD 74-01

Performance Analysis

The WAKEFIELD 74-01 circuit experienced three outages of over 100,000 CMI between April 2015 and March 2016.

On June 23, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 99 customers for up to 1,398 minutes resulting in 138,341 CMI.

On February 24, 2016, during a period of strong wind, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 81 customers for up to 1,373 minutes resulting in 100,603 CMI.

On February 24, 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 158 customers for up to 1,228 minutes resulting in 110,723 CMI.

In total, the WAKEFIELD 74-01 circuit had 37 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (18); equipment failure (14); animal contacts (3); other (2).

Remedial Actions

- In 2015, single-phase fuses were added in multiple locations.
- In 2015, a single-phase recloser and several new load break disconnect switches were installed.
- In 2015, all aluminum crimps on copper conductor were replaced on the three-phase line.
- In 2016, a new tie line is planned between WAKEFIELD 74-01 and WAKEFIELD 74-02. This tie will provide additional sectionalizing capabilities.
- In 2017, full circuit tree trimming will be performed.

- In 2017, a new Smart Grid device will be installed on this circuit.
- In 2017, single-phase fuses will be added in multiple locations.

29 Circuit 66504 -- SOUTH MANHEIM 65-04

Performance Analysis

The SOUTH MANHEIM 65-04 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On September 30, 2015, 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 1,834 customers for up to 499 minutes resulting in 385,110 CMI.

On October 9, 2015, during a period of heavy rain, a tree made contact with an overhead switch causing an interruption. This outage affected 1,951 customers for up to 93 minutes resulting in 133,081 CMI.

In total, the SOUTH MANHEIM 65-04 circuit had 23 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (10); tree related (6); animal contacts (3); nothing found (2); other (2).

Remedial Actions

- In 2015, full circuit tree trimming was performed.
- In 2015, all aluminum crimps on three-phase copper conductors were replaced.
- In 2016, the SOUTH MANHEIM 65-04 circuit breaker will be replaced.
- In 2017, five new Smart Grid devices will be installed on this circuit.
- In 2017, a new single-phase recloser will be installed.

30 Circuit 65603 -- QUARRYVILLE 56-03

Performance Analysis

The QUARRYVILLE 56-03 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On August 2, 2015, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 2,458 customers for up to 479 minutes resulting in 365,733 CMI.

In total, the QUARRYVILLE 56-03 circuit had 37 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (14); equipment failure (12); vehicles (4); animal contacts (3); other (3); nothing found (1).

Remedial Actions

- In 2015, all aluminum crimps on copper conductor were replaced on three-phase lines.
- In 2015, improvements were made to several distribution capacitors. The work will improve the circuit's voltage regulation.
- In 2016, full circuit tree trimming will be performed.
- In 2016, a new Smart Grid device will be installed on this circuit.
- In 2016, adding a single-phase fuse to this circuit will be evaluated.
- In 2017, a new Smart Grid device will be installed on this circuit.
- In 2017, a manual switch and a recloser will be replaced with automated vacuum reclosers as part of the Smart Grid Initiative.
- In 2017, a new line and terminal is planned to reduce customer exposure, customer count, line miles, and to improve sectionalizing capabilities.

31 Circuit 28604 -- BLYTHEBURN 86-04

Performance Analysis

The BLYTHEBURN 86-04 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On April 4, 2015, during a period of heavy rain, an equipment failure occurred on an overhead lightning protector causing a circuit breaker to trip to lockout. This outage affected 1,776 customers for up to 168 minutes resulting in 298,243 CMI.

On April 20, 2015, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 602 customers for up to 558 minutes resulting in 151,094 CMI.

In total, the BLYTHEBURN 86-04 circuit had 44 outages between April 2015 and March 2016, with the causes breaking down as follows: animal contacts (18); tree related (14); equipment failure (6); contact or dig in (3); nothing found (3).

Remedial Actions

- In 2015, full circuit tree trimming was completed.
- In 2015, single-phase fusing was installed in multiple locations.
- In 2016, additional fusing and animal guarding locations will be evaluated.
- In 2016, an Expanded Operational Review will be performed.
- In 2017, a new manual switch will be installed on a section of three-phase line to improve sectionalizing capabilities.
- In 2018, a section of single-phase will be relocated and fed from a different source in order to eliminate difficult-to-access lines.

32 Circuit 22901 -- HARWOOD 29-01

Performance Analysis

The HARWOOD 29-01 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 27, 2015, during a period of heavy rain, an equipment failure occurred on an overhead splice causing a circuit breaker to trip to lockout. This outage affected 2,179 customers for up to 1,120 minutes resulting in 549,635 CMI.

In total, the HARWOOD 29-01 circuit had 11 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (8); animal contacts (1); nothing found (1); tree related (1).

Remedial Actions

- In 2015, three Smart Grid devices were installed on this circuit.
- In 2015, a tie line between two three-phase sections was built to improve sectionalizing capabilities.
- In 2015, a tie line between the EAST HAZLETON 41-01 and the HARWOOD 29-01 was built.
- In 2016, a recloser will be automated as part of the Smart Grid Initiative.
- In 2017, a new sectionalizing device with remote operational capability will be installed as part of the Smart Grid Initiative.
- In 2017, single-phase fusing will be installed in multiple locations.

33 Circuit 44301 -- BEAVERTOWN 43-01

Performance Analysis

The BEAVERTOWN 43-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On May 31, 2015, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 476 customers for up to 439 minutes resulting in 175,929 CMI.

On June 30, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 475 customers for up to 1,329 minutes resulting in 309,939 CMI.

In total, the BEAVERTOWN 43-01 circuit had 51 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (19); equipment failure (16); animal contacts (6); other (4); nothing found (3); vehicles (2); contact or dig in (1).

Remedial Actions

- In 2015, full circuit tree trimming was completed.
- In 2015, single-phase fusing was installed in multiple locations.
- In 2016, additional fusing and animal guarding locations will be evaluated.
- In 2016, an Expanded Operational Review will be performed.
- In 2017, a new manual switch will be installed on a section of three-phase line to improve sectionalizing capabilities.
- In 2018, a section of single-phase will be relocated and fed from a different source in order to eliminate difficult-to-access lines.

34 Circuit 22805 -- HAUTO 28-05

Performance Analysis

The HAUTO 28-05 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 22, 2015, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,372 customers for up to 566 minutes resulting in 577,916 CMI.

In total, the HAUTO 28-05 circuit had seven outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (3); animal contacts (2); tree related (2).

Remedial Actions

- In 2015, full circuit tree trimming was performed.
- In 2016, several cutout and insulator replacements will be performed.
- In 2016, a manual switch will be replaced with an automated vacuum recloser as part of the Smart Grid Initiative.
- In 2017, single-phase fusing at multiple locations will be installed.
- In 2017, a tie line between the HAUTO 28-05 and the GREENWOOD 06-01 will be built.

35 Circuit 53602 -- DALMATIA 36-02

Performance Analysis

The DALMATIA 36-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On May 31, 2015, an equipment failure occurred causing an interruption. This outage affected 814 customers for up to 440 minutes resulting in 145,867 CMI.

On June 12, 2015, during a period of heavy rain, an equipment failure occurred on a pole or pole arm causing a recloser to trip to lockout. This outage affected 672 customers for up to 676 minutes resulting in 123,518 CMI.

In total, the DALMATIA 36-02 circuit had 48 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (18); equipment failure (16); animal contacts (6); nothing found (6); vehicles (2).

Remedial Actions

- In 2015, four sectionalizing devices were upgraded with remote operational capability as part of the Smart Grid Initiative.
- In 2015, a problematic recloser was replaced.
- In 2015, two locations with aluminum crimps on copper conductor were replaced.
- In 2016, two additional single-phase fusing locations have been identified and will be installed.
- In 2016, three additional devices with remote operational capability will be installed as part of the Smart Grid Initiative.
- In 2016, 17 motor operated switches are scheduled to be installed on the SUNBURY-DAUPHIN and DAUPHIN-PINE GROVE transmission lines. The switches will allow operators to quickly sectionalize transmission outages to no more than a single distribution substation.

- In 2017, a section of difficult-to-access line will be relocated to a more accessible location, and reconductored with spacer cable.
- In 2018, full circuit trimming will be performed.

36 Circuit 27403 -- KEYSER AVENUE 74-03

Performance Analysis

The KEYSER AVENUE 74-03 circuit experienced three outages of over 100,000 CMI between April 2015 and March 2016.

On October 12, 2015, a vehicle contact occurred causing a recloser to trip to lockout. This outage affected 1,203 customers for up to 245 minutes resulting in 113,611 CMI.

On October 29, 2015, during a period of strong wind, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 1,203 customers for up to 125 minutes resulting in 124,872 CMI.

On February 24, 2016, during a period of strong wind, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 666 customers for up to 210 minutes resulting in 139,700 CMI.

In total, the KEYSER AVENUE 74-03 circuit had 11 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (7); nothing found (3); vehicles (1).

Remedial Actions

- In 2015, additional fusing opportunities were evaluated.
- In 2016, an automated recloser will be installed to operate as a tie point.
- In 2017, an automated recloser will be installed.
- In 2018, an automated recloser will be installed to operate as a tie point.

- In 2018, adding an additional tie CEDAR AVENUE 15-01 and the KEYSER AVENUE 74-03 will be evaluated.

37 Circuit 20102 -- AVOCA 01-02

Performance Analysis

The AVOCA 01-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On March 22, 2016, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 2,915 customers for up to 58 minutes resulting in 167,790 CMI.

On March 22, 2016, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 3,136 customers for up to 199 minutes resulting in 341,548 CMI.

In total, the AVOCA 01-02 circuit had 15 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (8); animal contacts (3); vehicles (2); nothing found (1); tree related (1).

Remedial Actions

- In 2016, full circuit tree trimming will be performed.
- In 2016, installing three-phase fusing in multiple locations will be evaluated.
- In 2016, feeding a long span of radial single-phase line from a different source will be evaluated.
- In 2018, a manual switch will be replaced with a sectionalizing device with remote operational capability on a tie between the AVOCA 01-02 and OLD FORGE 63-02 as part of the Smart Grid Initiative.

- In 2018, a manual switch will be replaced with a sectionalizing device with remote operational capability on this circuit as part of the Smart Grid Initiative.

38 Circuit 40201 -- BEAR GAP 02-01

Performance Analysis

The BEAR GAP 02-01 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On August 18, 2015, an unidentified issue occurred with a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,642 customers for up to 475 minutes resulting in 168,936 CMI.

In total, the BEAR GAP 02-01 circuit had 61 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (29); equipment failure (13); nothing found (8); animal contacts (6); other (4); vehicles (1).

Remedial Actions

- In 2015, full circuit tree trimming was performed.
- In 2015, a new sectionalizing device with remote operational capability was installed as part of the Smart Grid Initiative.
- In 2015, single and three-phase fusing was installed in multiple locations.
- In 2016, a manual sectionalizing switch will be replaced with an automated vacuum recloser as part of the Smart Grid Initiative.
- In 2016, a solid-blade disconnect will be installed on a long span of single-phase line will be evaluated.

39 Circuit 44904 -- SCOTT 49-04

Performance Analysis

The SCOTT 49-04 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On October 28, 2015, a rogue blimp caused an issue with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,043 customers for up to 763 minutes resulting in 429,978 CMI.

In total, the SCOTT 49-04 circuit had 19 outages between April 2015 and March 2016, with the causes breaking down as follows: nothing found (4); other (4); tree related (4); animal contacts (3); equipment failure (3); vehicles (1).

Remedial Actions

- In 2015, a substation underground getaway was proactively replaced.
- In 2016, new three-phase fusing will be investigated at one location.
- In 2016, solid blade installation will be investigated in two locations.
- In 2017, three-phase fusing will be installed in one location.
- In 2018, full circuit tree trimming will be performed.

40 Circuit 10702 -- CATASAUQUA 07-02

Performance Analysis

The CATASAUQUA 07-02 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 30, 2015, during a period of strong wind, an unidentified issue occurred with an overhead conductor causing a recloser to trip to lockout. This outage affected 908 customers for up to 313 minutes resulting in 268,753 CMI.

In total, the CATASAUQUA 07-02 circuit had 15 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (9); animal contacts (2); equipment failure (2); other (1); vehicles (1).

Remedial Actions

- In 2015, full circuit tree trimming was performed.
- In 2016, an Expanded Operational Review will be completed.
- In 2016, two additional single-phase fusing locations will be evaluated.
- In 2016, three additional locations for three-phase fusing or disconnects will be evaluated.
- In 2017, four sectionalizing devices with remote operational capability will be installed as part of the Smart Grid Initiative.
- In 2019, a project is scheduled to reconfigure a portion of the line and transfer it to a new feeder.

41 Circuit 59002 -- MIFFLINTOWN 90-02

Performance Analysis

The MIFFLINTOWN 90-02 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On December 18, 2015, a vehicle contact occurred causing a recloser to trip to lockout. This outage affected 876 customers for up to 246 minutes resulting in 142,958 CMI.

In total, the MIFFLINTOWN 90-02 circuit had 51 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (23); equipment failure (16); animal contacts (6); vehicles (4); nothing found (1); other (1).

Remedial Actions

- In 2016, one single-phase fusing location was identified for installation.
- In 2016, full circuit trimming will be performed.
- In 2016, adding a three- phase hydraulic recloser will be evaluated.
- In 2019, an existing three-phase hydraulic recloser will be upgraded to a communication recloser as part of the Smart Grid Initiative.

42 Circuit 16204 -- POCONO FARMS 62-04

Performance Analysis

The POCONO FARMS 62-04 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 27, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 962 customers for up to 492 minutes resulting in 472,659 CMI.

In total, the POCONO FARMS 62-04 circuit had 17 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (7); tree related (4); animal contacts (3); contact or dig in (2); nothing found (1).

Remedial Actions

- In 2015, single-phase fuses were added in multiple locations.
- In 2016, a new tie line to an adjacent feeder is under evaluation.
- In 2016, an Expanded Operational Review will be performed.
- In 2016, an automated recloser will be installed.
- In 2017, an automated recloser will be installed.
- In 2017, a difficult-to-access span of three-phase will be moved to a more accessible location and a recloser will be upgraded with a new automated device to function as a tie.

43 Circuit 10903 -- COOPERSBURG 09-03

Performance Analysis

The COOPERSBURG 09-03 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On March 28, 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 211 customers for up to 1,106 minutes resulting in 167,107 CMI.

In total, the COOPERSBURG 09-03 circuit had 28 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (12); animal contacts (9); equipment failure (5); vehicles (2).

Remedial Actions

- In 2015, full circuit tree trimming was performed.
- In 2016, single-phase fusing will be evaluated on several taps.
- In 2018, a new Smart Grid device will be installed on this circuit as part of the Smart Grid Initiative.
- In 2016, three three-phase fusing locations or disconnects will be evaluated.
- In 2016, an additional single-phase fusing location will be evaluated.

44 Circuit 67804 -- WEST LANCASTER 78-04

Performance Analysis

The WEST LANCASTER 78-04 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On July 20, 2015, an equipment failure occurred on an underground conductor causing a circuit breaker to trip to lockout. This outage affected 2,030 customers for up to 77 minutes resulting in 101,545 CMI.

On September 30, 2015, during a period of strong wind, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 1,219 customers for up to 422 minutes resulting in 313,027 CMI.

In total, the WEST LANCASTER 78-04 circuit had 14 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (7); tree related (4); nothing found (2); animal contacts (1).

Remedial Actions

- In 2015, all aluminum crimps on copper conductor were replaced on three-phase lines.

- In 2015, two reclosers were replaced with automated vacuum reclosers as part of the Smart Grid Initiative.
- In 2015, single-phase fuses were added in multiple locations.
- In 2017, full circuit tree trimming will be performed.
- In 2017, a new Smart Grid device will be installed on this circuit.
- In 2017, a manual switch will be replaced with an automated vacuum recloser as part of the Smart Grid Initiative.

45 Circuit 16504 -- STROUDSBURG 65-04

Performance Analysis

The STROUDSBURG 65-04 circuit experienced three outages of over 100,000 CMI between April 2015 and March 2016.

On June 9, 2015, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 580 customers for up to 189 minutes resulting in 109,260 CMI.

On October 27, 2015, a vehicle contact occurred causing a temporary open point to be interrupted. This outage affected 2,163 customers for up to 442 minutes resulting in 153,481 CMI.

On February 24, 2016, during a period of strong wind, a tree made contact with an overhead conductor causing an interruption. This outage affected 220 customers for up to 508 minutes resulting in 111,564 CMI.

In total, the STROUDSBURG 65-04 circuit had 37 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (13); animal contacts (10); equipment failure (9); vehicles (3); nothing found (1); other (1).

Remedial Actions

- In 2016, a review of the protection settings will be completed to determine if a switch can be changed to function as a recloser.
- In 2018, full circuit tree trimming will be completed.
- In 2018, an additional automated recloser will be added.

46 Circuit 28301 -- NEWFOUNDLAND 83-01

Performance Analysis

The NEWFOUNDLAND 83-01 circuit experienced no outages of over 100,000 CMI between April 2015 and March 2016.

In total, the NEWFOUNDLAND 83-01 circuit had 91 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (45); animal contacts (21); equipment failure (14); nothing found (7); other (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2015, FISR automatic switching was enabled.
- In 2016, an automated recloser was installed.
- In 2016, hot spot tree trimming will be evaluated.
- In 2017, full circuit trimming will be performed.

47 Circuit 27502 -- WEISSPORT 75-02

Performance Analysis

The WEISSPORT 75-02 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On July 22, 2015, a vehicle contact occurred causing a recloser to trip to lockout. This outage affected 1,577 customers for up to 284 minutes resulting in 447,868 CMI.

In total, the WEISSPORT 75-02 circuit had 15 outages between April 2015 and March 2016, with the causes breaking down as follows: animal contacts (6); tree related (3); equipment failure (2); other (2); nothing found (1); vehicles (1).

Remedial Actions

- In 2014, full circuit tree trimming was performed.
- In 2015, an Expanded Operational Review was performed. Several minor improvements were identified and completed.
- In 2015, a deteriorated river crossing pole was repaired.
- In 2016, the conductor crossing the river between East Jim Thorpe and West Jim Thorpe will be rebuilt. The wood pole structure will be replaced with steel poles, and the existing conductor will be upgraded to a heavier conductor.

48 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced no outages of over 100,000 CMI between April 2015 and March 2016.

In total, the GREEN PARK 24-02 circuit had 61 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (27); animal contacts (15); equipment failure (13); nothing found (4); vehicles (2).

Remedial Actions

- In 2015, a roughly 4,000 foot single-phase extension transferred high CEMI customers to an adjacent circuit.
- In 2015, extensive hot spot trimming was performed.
- In 2015, 22 locations with aluminum crimps on copper conductor were replaced.
- In 2016, full circuit trimming will be performed.
- In 2016, an Expanded Operational Review will be completed.
- In 2021, a three mile tie line is proposed that would provide approximately 1,120 radial customers with an alternate source for sectionalizing.

49 Circuit 41801 -- GOWEN CITY 18-01

Performance Analysis

The GOWEN CITY 18-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On February 16, 2016, 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 389 customers for up to 550 minutes resulting in 159,239 CMI.

On February 24, 2016, during a period of heavy rain, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 387 customers for up to 1,547 minutes resulting in 184,411 CMI.

In total, the GOWEN CITY 18-01 circuit had 29 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (9); tree related (8); animal contacts (5); nothing found (5); other (1); vehicles (1).

Remedial Actions

- In 2016, full circuit tree trimming will be performed.
- In 2016, a non-communicating sectionalizing device will be replaced with an automated vacuum recloser as part of the Smart Grid Initiative.
- In 2016, single-phase fusing will be installed in multiple locations.

50 Circuit 67502 -- WEST WILLOW 75-02

Performance Analysis

The WEST WILLOW 75-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On June 23, 2015, 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 1,748 customers for up to 1,359 minutes resulting in 229,510 CMI.

On July 9, 2015, during a period of strong wind, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 253 customers for up to 421 minutes resulting in 106,424 CMI.

In total, the WEST WILLOW 75-02 circuit had 24 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (11); equipment failure (7); animal contacts (4); vehicles (2).

Remedial Actions

- In 2015, all aluminum crimps on copper conductor were replaced on the three-phase line.
- In 2015, a sectionalizer was replaced with a single-phase recloser.
- In 2016, single-phase fuses will be added in multiple locations.
- In 2016, relocating a section of single-phase line to a more- accessible location will be investigated.
- In 2016, a sectionalizer was replaced with a single-phase recloser. An additional sectionalizer will be replaced in 2016.
- In 2017, a manual switch will be replaced with an automated vacuum recloser as part of the Smart Grid Initiative.
- In 2017, three new smart grid devices will be installed on this circuit.
- In 2017, full circuit tree trimming will be performed.

51 Circuit 17802 -- GILBERT 78-02

Performance Analysis

The GILBERT 78-02 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On August 30, 2015, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 596 customers for up to 223 minutes resulting in 132,794 CMI.

On September 13, 2015, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 596 customers for up to 194 minutes resulting in 115,182 CMI.

In total, the GILBERT 78-02 circuit had 57 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (24); equipment failure (14); animal contacts (10); nothing found (5); vehicles (3); other (1).

Remedial Actions

- In 2015, an Expanded Operational Review was conducted.
- In 2016, full circuit trimming will be performed.
- In 2016, two fusing opportunities will be investigated.
- In 2016, automated switching by the FISR system will go live on this circuit.

52 Circuit 42601 -- TUSCARORA 26-01

Performance Analysis

The TUSCARORA 26-01 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On October 28, 2015, during a period of strong wind, a rogue blimp caused an issue with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 2,163 customers for up to 429 minutes resulting in 286,122 CMI.

On February 24, 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 598 customers for up to 1,415 minutes resulting in 114,933 CMI.

In total, the TUSCARORA 26-01 circuit had 19 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (9); tree related (5); animal contacts (2); other (2); nothing found (1).

Remedial Actions

- In 2015, SCADA was installed at the TUSCARORA substation.
- In 2016, an existing disconnect switch will be automated as part of the Smart Grid Initiative.
- In 2016, additional single-phase fusing on single-phase taps will be evaluated.

- In 2018, full circuit tree trimming will be performed.

53 Circuit 26703 -- HEMLOCK FARMS 67-03

Performance Analysis

The HEMLOCK FARMS 67-03 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On May 16, 2015, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 369 customers for up to 886 minutes resulting in 230,252 CMI.

On February 24, 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 201 customers for up to 522 minutes resulting in 104,737 CMI.

In total, the HEMLOCK FARMS 67-03 circuit had 64 outages between April 2015 and March 2016, with the causes breaking down as follows: animal contacts (27); tree related (19); equipment failure (9); nothing found (8); other (1).

Remedial Actions

- In 2015, full circuit tree trimming was completed.
- In 2016 additional animal guarding will be investigated.
- In 2018, a tie will be automated to improve reliability.
- In 2018, two new automated reclosers will be installed.

54 Circuit 23504 -- GEORGETOWN 35-04

Performance Analysis

The GEORGETOWN 35-04 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On February 24, 2016, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 1,059 customers for up to 556 minutes resulting in 335,037 CMI.

In total, the GEORGETOWN 35-04 circuit had 6 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (4); other (2).

Remedial Actions

- In 2014, additional fusing was added at five locations.
- In 2017, an Expanded Operational Review will be performed on this circuit.
- In 2018, full circuit trimming will be performed.

55 Circuit 13103 -- NORTHAMPTON 31-03

Performance Analysis

The NORTHAMPTON 31-03 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On January 23, 2016, during a period of ice/sleet/snow, an equipment failure occurred on a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,845 customers for up to 245 minutes resulting in 378,868 CMI.

In total, the NORTHAMPTON 31-03 circuit had 9 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (5); nothing found (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2015, full circuit trimming was performed.
- In 2016, several locations will be evaluated for single-phase fusing.
- In 2016, additional smart grid devices will be evaluated for this circuit.
- In 2017, a tie line will be constructed to the NORTHAMPTON 31-02 and two additional smart grid devices will be added.

56 Circuit 44902 -- SCOTT 49-02

Performance Analysis

The SCOTT 49-02 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On October 28, 2015, during a period of strong wind, a rogue blimp caused an issue with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,710 customers for up to 151 minutes resulting in 257,320 CMI.

In total, the SCOTT 49-02 circuit had 30 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (16); other (5); equipment failure (3); nothing found (3); vehicles (2); animal contacts (1).

Remedial Actions

- In 2015, Bloomsburg University service was moved to another circuit which transferred load from the SCOTT 49-02 to the BLOOMSBURG 77-06 and reduced customer exposure to potential outage.
- In 2015, the underground getaway for this circuit was replaced with a new over-head getaway.
- In 2017, full circuit trimming will be performed.

57 Circuit 28803 -- LAKEVILLE 88-03

Performance Analysis

The LAKEVILLE 88-03 circuit experienced two outages of over 100,000 CMI between April 2015 and March 2016.

On September 28, 2015, an unidentified issue occurred with an underground component causing a recloser to trip to lockout. This outage affected 610 customers for up to 234 minutes resulting in 142,435 CMI.

On March 28, 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 688 customers for up to 299 minutes resulting in 205,257 CMI.

In total, the LAKEVILLE 88-03 circuit had 37 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (15); equipment failure (8); nothing found (7); animal contacts (6); other (1).

Remedial Actions

- In 2017, full circuit tree trimming will be completed.
- In 2017, an automated recloser will be installed.

58 Circuit 43202 -- MILLVILLE 32-02

Performance Analysis

The MILLVILLE 32-02 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On October 28, 2015, during a period of strong wind, a rogue blimp caused an issue with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,176 customers for up to 155 minutes resulting in 181,198 CMI.

In total, the MILLVILLE 32-02 circuit had 36 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (24); equipment failure (5); animal contacts (3); nothing found (2); other (2).

Remedial Actions

- In 2015, hot spot trimming and hazard tree removal was performed.
- In 2015, a single-phase hydraulic device was replaced with a larger vacuum recloser.
- In 2015, series fusing was installed.
- In 2015, a project to increase the load that can be transferred from the MILLVILLE 32-02 to the HUGHESVILLE 70-01 was completed. Approximately 8,500 feet of larger capacity conductor was installed on the MILLVILLE 32-02 as part of this project.
- In 2016, full circuit tree trimming will be performed.

59 Circuit 45501 -- DERRY 55-01

Performance Analysis

The DERRY 55-01 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On October 28, 2015, a rogue blimp caused an issue with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,430 customers for up to 158 minutes resulting in 225,539 CMI.

In total, the DERRY 55-01 circuit had 36 outages between April 2015 and March 2016, with the causes breaking down as follows: equipment failure (11); tree related (10); animal contacts (7); nothing found (5); other (2); vehicles (1).

Remedial Actions

- In 2015, a new manual disconnect switch was installed at the head of a radial tap.
- In 2015, a new sectionalizing device with remote operational capability was installed to improve sectionalizing as part of the Smart Grid Initiative.
- In 2016, additional fusing will be installed.
- In 2016, solid blade disconnects will be installed on a three-phase tap.
- In 2017, full circuit tree trimming will be performed.
- In 2017, 500 feet of new single-phase will be built to replace a section of difficult-to-access conductor, and a new recloser will be installed.

60 Circuit 64502 -- LAVINO 45-02

Performance Analysis

The LAVINO 45-02 circuit experienced one outage of over 100,000 CMI between April 2015 and March 2016.

On June 12, 2015, during a period of lightning, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 1,894 customers for up to 171 minutes resulting in 323,627 CMI.

In total, the LAVINO 45-02 circuit had 12 outages between April 2015 and March 2016, with the causes breaking down as follows: animal contacts (3); tree related (3); vehicles (3); equipment failure (2); nothing found (1).

Remedial Actions

- In 2015, full circuit tree trimming was performed
- In 2015, all aluminum crimps on copper conductor were replaced on three-phase lines.
- In 2015, two new sectionalizing devices were added to this circuit.
- In 2016, reconductoring a section of the LAVINO 45-02 line will be evaluated.
- In 2016, FISR will be activated on his circuit.
- In 2017, 69kV switches will be replaced with motor operated air break switches in order to automate switching capabilities between two transmission lines.

61 Circuit 46504 -- LOCK HAVEN 65-04

Performance Analysis

The LOCK HAVEN 65-04 circuit experienced no outages of over 100,000 CMI between April 2015 and March 2016.

In total, the LOCK HAVEN 65-04 circuit had 29 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (16); equipment failure (6); animal contacts (4); nothing found (2); other (1).

Remedial Actions

- In 2017, full circuit trimming will be performed.
- In 2016, single-phase fusing will be investigated on one tap.

62 Circuit 55002 -- NEWPORT 50-02

Performance Analysis

The NEWPORT 50-02 circuit experienced no outages of over 100,000 CMI between April 2015 and March 2016.

In total, the NEWPORT 50-02 circuit had 66 outages between April 2015 and March 2016, with the causes breaking down as follows: tree related (23); equipment failure (19); animal contacts (11); nothing found (7); contact or dig in (2); other (2); vehicles (2).

Remedial Actions

- In 2016, a single-phase recloser was replaced.
- In 2016, an Expanded Operational Review and Infrared line patrol will be completed.

- In 2016, multiple cross arms and transformer cutouts will be replaced.
- In 2017, full circuit trimming will be performed.

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	3,522	21.5%	50,838	4.8%	4,101,296	3.1%
Contact / Dig-In	188	1.1%	14,666	1.4%	902,881	0.7%
Directed by Non-PPL Authority	216	1.3%	26,531	2.5%	2,393,951	1.8%
Equipment Failures	5,158	31.5%	297,562	28.4%	33,726,019	25.9%
Improper Design	3	0.0%	1,856	0.2%	245,849	0.2%
Improper Installation	3	0.0%	1,023	0.1%	81,632	0.1%
Improper Operation	4	0.0%	4,509	0.4%	429,290	0.3%
Nothing Found	1,201	7.3%	64,485	6.1%	5,382,958	4.1%
Other Controllable	92	0.6%	10,577	1.0%	391,709	0.3%
Other Non Control	268	1.6%	64,256	6.1%	5,553,973	4.3%
Other Public	64	0.4%	12,317	1.2%	1,548,666	1.2%
Tree Related	4,915	30.0%	346,935	33.1%	60,872,795	46.8%
Vehicles	745	4.5%	153,379	14.6%	14,571,030	11.2%
Total	16,379	100.0%	1,048,934	100.0%	130,202,050	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 40% of cases, 41% of customer interruptions, and 45% 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 22% 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 80% 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 40% of the cases of trouble, 41% of the customer interruptions and 46% 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	1st Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of poles)	100	6	6	6	6
Transmission arm replacements (# of sets)	75	0	0	0	0
Transmission air break switch inspections (# of switches)	78	19	2	19	2
Transmission lightning arrester installations (# of sets)	1,716	300	508	300	508
Transmission structure inspections (# of structures)	1,862	0	0	0	0
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	326	326	321	326	321
Transmission reclearing (# of miles) 69 kV	769	89	320	89	320
Transmission reclearing (# of miles) 138 kV	59	5	19	5	19
Transmission danger tree removals-Bulk Power (# of trees)	N/A	N/A	N/A	N/A	N/A
Substation					
Substation batteries (# of activities)	654	419	423	419	423
Circuit breakers (# of activities)	579	90	226	90	226
Substation inspections (# of activities)	4,545	1,347	1,350	1,347	1,350
Transformer maintenance (# of activities)	1,430	369	341	369	341

Inspection & Maintenance Goals/Objectives	Annual Budget	1st Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	1,424	261	340	261	340
C-truss distribution poles (# of poles)	4,102	270	272	270	272
Capacitor (MVAR added)	25	5	5	5	5
OCR Replacements (# of)	99	49	32	49	32
Distribution pole inspections (# of poles)	68,237	720	0	720	0
Distribution line inspections (hours)	12,944	4,011	3,639	4,011	3,639
Group re-lamping (# of lamps)	14,269	1,512	1,076	1,512	1,076
Test sections of underground distribution cable	N/A	173	173	173	173
Distribution tree trimming (# of miles)	6,123	1,532	1,672	1,532	1,672
Distribution herbicide (# of acres)	N/A	N/A	N/A	N/A	N/A
Distribution >18" removals within R/W (# of trees)	N/A	N/A	N/A	N/A	N/A
Distribution hazard tree removals outside R/W (# of trees)	N/A	N/A	N/A	N/A	N/A
LTN manhole inspections (# of)	553	201	206	201	206
LTN vault inspections (# of)	821	235	190	235	190
LTN network protector overhauls (# of)	91	21	26	21	26
LTN reverse power trip testing (# of)	51	10	10	10	10

- 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	1st Quarter		Year-to-date	
	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
Provide Electric Service	1,475	1,760	1,475	1,760
Vegetation Management	11,381	13,118	11,381	13,118
Customer Response	12,807	15,314	12,807	15,314
Reliability Maintenance	12,777	10,969	12,777	10,969
System Upgrade	629	2,094	629	2,094
Customer Service/Accounts	28,865	28,793	28,865	28,793
Others	10,605	12,157	10,605	12,157
Total O&M Expenses	78,538	84,205	78,538	84,205

- 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	1st Quarter		Year-to-date	
	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
New Service/Revenue	23,158	23,459	23,158	23,459
System Upgrade	134,377	96,496	134,377	96,496
Reliability & Maintenance	122,943	94,285	122,943	94,285
Customer Response	1,582	2,816	1,582	2,816
Other	6,454	3,420	6,454	3,420
Total	288,513	220,476	288,513	220,476

- 9) *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	67
Journeyman Lineman	215
Journeyman Lineman-Trainee	41
Helper	0
Groundhand	6
Troubleman	49
T&D Total	378
Electrical	
Elect Leaders-UG	5
Elect Leaders-Net	10
Elect Leaders-Sub	22
Journeyman Elect-UG	19
Journeyman Elect-Net	32
Journeyman Elect-Sub	61
Journeyman Elect Trainee-UG	2
Journeyman Elect Trainee-Net	3
Journeyman Elect Trainee-Sub	24
Helper	0
Laborer-Network	0
Laborer-Substation	0
Electrical Total	178
Overall Total	556

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.

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.

Appendix B

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.

Appendix B

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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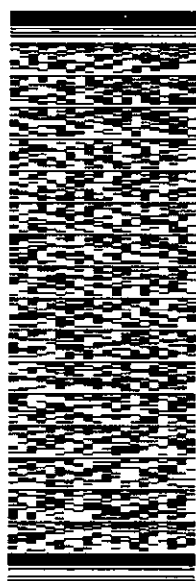
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