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FEDERAL EXPRESS

October 31, 2014

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

RECEIVED

OCT 31 2014

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

**Re: PPL Electric Utilities Corporation
Quarterly Reliability Report for the
Period Ended September 30, 2014
Docket No. L-00030161**

Dear Ms. Chiavetta:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric") is an original of PPL Electric's Quarterly Reliability Report for the Period Ended September 30, 2014. Also enclosed, in a sealed envelope, is a copy of the report containing competitively sensitive and proprietary information. The Company hereby requests that the Commission treat that information, and the report containing the information, as privileged and confidential. The report is being filed pursuant to 52 Pa. Code § 57.195(d).

Pursuant to 52 Pa. Code § 1.11, the enclosed document is to be deemed filed on October 31, 2014, 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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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 third quarter of 2014.

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

The following table provides data for the 12 months ending September 30th, 2014¹.

SAIFI (Benchmark = 0.98; Rolling 12-month Std. = 1.18)	0.94
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	174
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	164
MAIFI²	3.31
Average Number of Customers Served³	1,397,706
Number of Sustained Customer Interruptions (Trouble Cases)	17,471
Number of Customers Affected⁴	1,315,392
Customer Minutes of Interruptions (CMI)	229,176,408
Number of Customer Momentary Interruptions	4,633,251

PPL Electric was affected by a significant ice storm concentrated in the Lancaster region starting on February 5, 2014. Due to the concentrated nature of the storm, it did not affect enough customers to be declared a PUC major event. Without this storm, which would be excluded under the IEEE 2.5B standard, system values would be: SAIFI 0.88; CAIDI 136; and SAIDI 119.

During the third quarter, there were no (0) PUC major events, two (2) PUC reportable storms, and four (4) other storms that required the opening of one or more area emergency centers to manage restoration efforts.

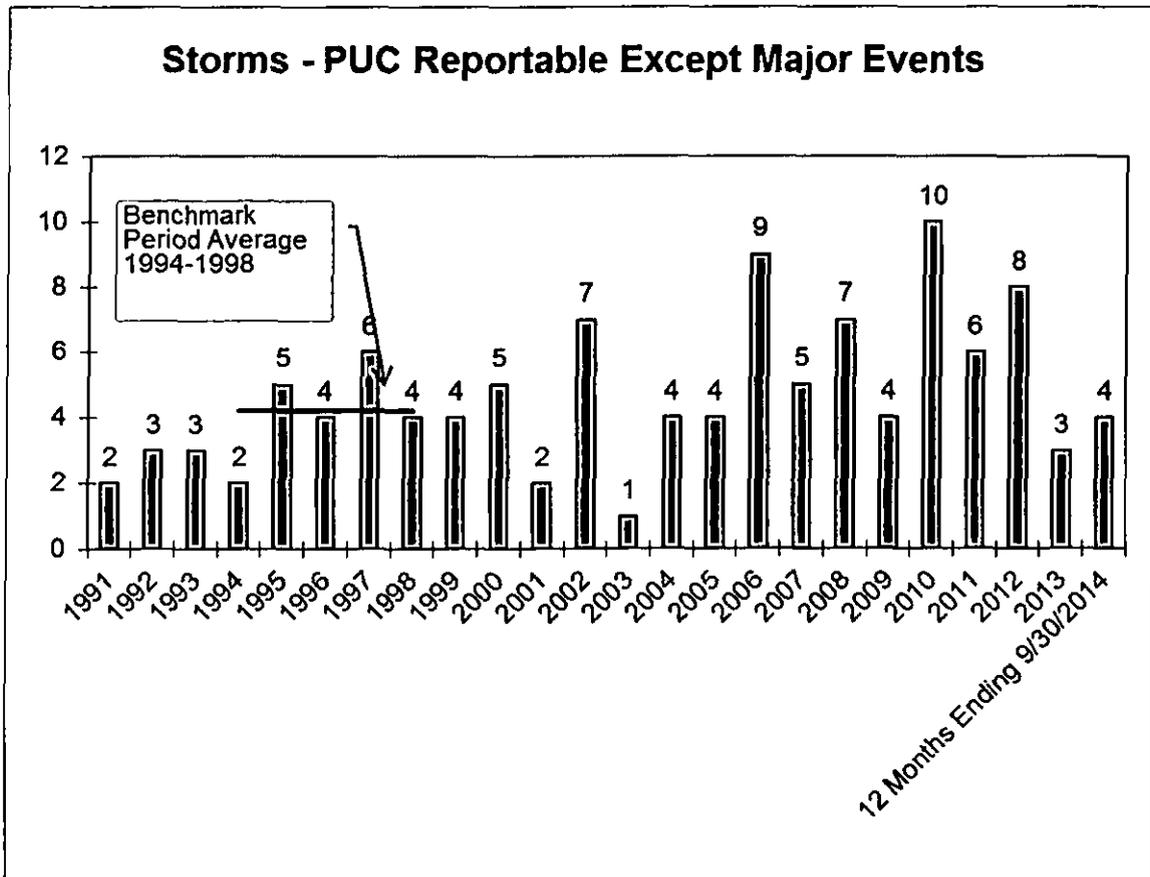
¹ Non-PPL Electric problems are excluded here, but may be found in Item 5.

² MAIFI data is obtained at the substation breaker and does not include momentary interruptions at lower level devices.

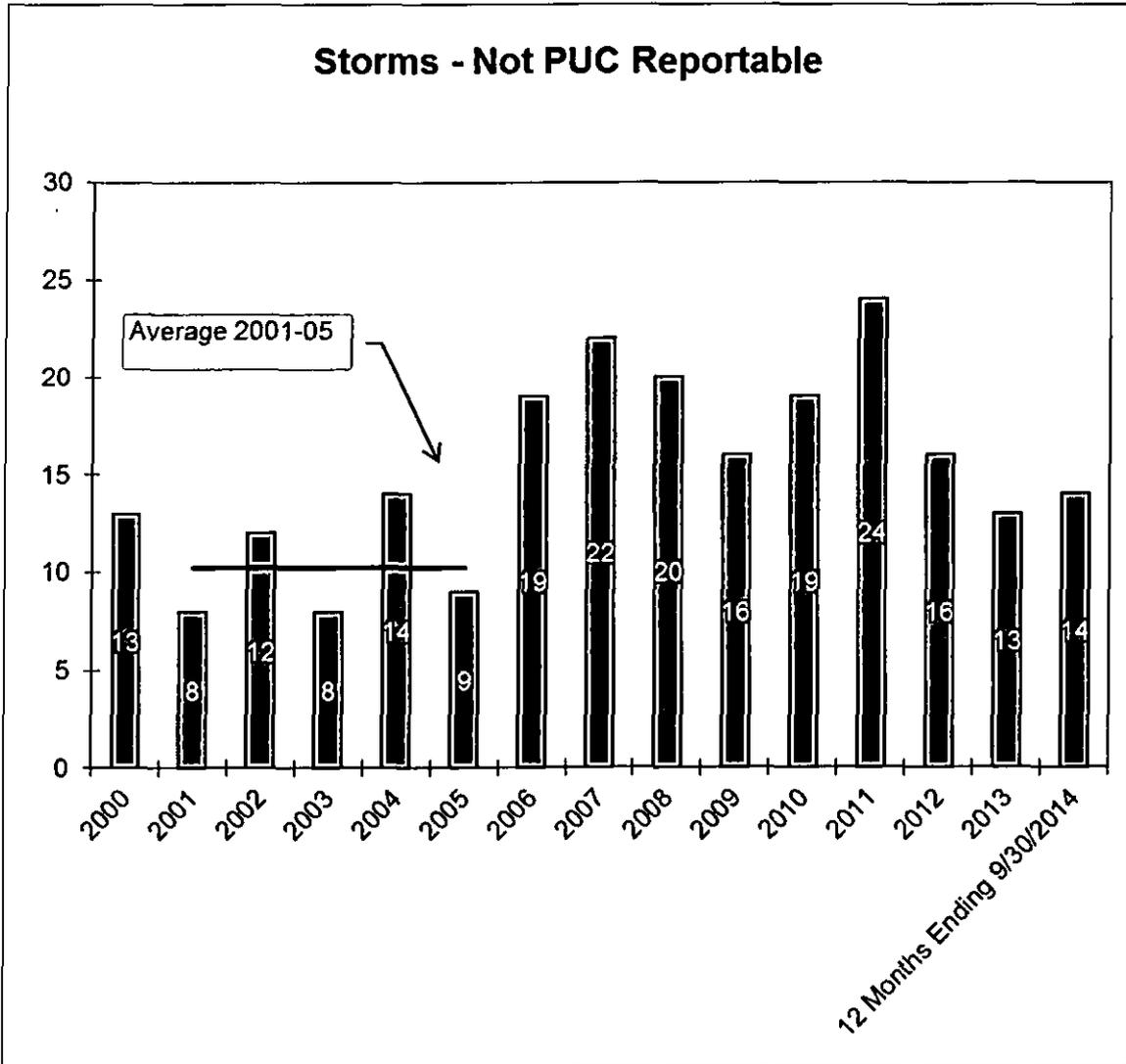
³ PPL Electric calculates the annual indices using customers served at the end of the period. This is consistent with the method used to calculate PPL Electric's benchmarks.

⁴ 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 four (4) PUC-reportable storms ($\geq 2,500$ customers interrupted for ≥ 6 hours) other than major events.



In addition, there were fourteen (14) 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 7.5% of the circuits in the system for the 12 months ended at the current quarter. NOTE: The February 5, 2014, Lancaster ice storm caused a large number of historically non-problematic circuits to make the worst performing list. Therefore, PPL Electric has elected to report on the worst 7.5% of circuits in 2014 so as not to lose track of circuits that would be included had the ice storm not occurred. An explanation of how PPL Electric defines its worst performing circuits is included in Appendix A.

WPC Rank	Feeder ID	SAIFI	CAIDI	SAIDI	MAIFI ⁵	Customers	Cases of Trouble ⁶	Customer Minutes Interrupted (CMI)
1	56501	1.4	863	1,235	8.1	2,341	31	2,891,514
2	64904	2.2	411	902	5.0	3,055	19	2,757,714
3	64101	2.2	723	1,595	5.0	1,637	34	2,611,828
4	66202	2.4	840	2,039	3.4	1,270	14	2,590,324
5	64801	2.1	695	1,441	10.2	1,522	72	2,194,282
6	65603	1.4	619	852	8.1	2,451	80	2,088,565
7	63404	2.4	804	1,940	5.1	1,067	20	2,070,638
8	64802	1.2	1380	1,596	17.2	1,269	52	2,025,957
9	60803	2.1	493	1,027	4.0	1,913	33	1,966,177
10	67401	1.6	894	1,418	2.7	1,361	27	1,931,032
11	65702	0.8	1411	1,084	5.9	1,699	41	1,842,518
12	43202	1.9	805	1,560	1.3	1,152	37	1,798,207
13	43103	3.4	234	801	4.6	2,235	46	1,790,551
14	63402	3.6	263	942	5.1	1,892	23	1,782,261
15	52402	6.3	166	1,052	2.0	1,640	66	1,725,720
16	25801	4.7	196	919	0.0	1,812	41	1,665,357
17	41902	2.6	485	1,247	9.1	1,304	32	1,627,139
18	62105	2.8	390	1,099	5.3	1,436	25	1,579,453
19	65004	1.2	1074	1,264	10.0	1,232	16	1,557,424
20	61701	0.8	1558	1,236	1.0	1,106	12	1,367,513

⁵ MAIFI data is obtained at the substation breaker and does not include momentary interruptions at lower level devices.

⁶ Cases of trouble are the number of sustained customer service interruptions.

WPC Rank	Feeder ID	SAIFI	CAIDI	SAIDI	MAIFI ⁵	Customers	Cases of Trouble ⁶	Customer Minutes Interrupted (CMI)
21	57304	2.7	322	874	4.1	1,554	32	1,358,806
22	65802	3.1	227	705	2.0	1,898	38	1,339,402
23	14602	4.1	188	772	2.0	1,669	9	1,289,610
24	62607	1.3	336	433	3.0	2,919	32	1,266,186
25	22001	6.4	130	825	7.0	1,534	44	1,266,090
26	67502	0.5	1486	725	4.1	1,733	23	1,256,865
27	28604	1.2	567	696	0.0	1,775	30	1,235,431
28	63403	2.4	359	854	8.0	1,439	29	1,229,632
29	67402	1.1	863	925	4.0	1,309	38	1,211,299
30	60901	1.7	449	745	9.0	1,563	33	1,164,968
31	66203	4.0	305	1,219	2.1	945	14	1,152,627
32	47502	3.1	474	1,451	2.0	793	14	1,151,133
33	60605	2.4	335	818	1.0	1,395	25	1,142,366
34	21401	0.6	685	436	0.0	2,548	9	1,111,647
35	46902	20.4	183	3,714	2.0	299	5	1,110,537
36	63401	2.0	691	1,351	3.1	819	18	1,106,454
37	56504	1.6	346	554	3.0	1,993	61	1,104,595
38	28301	4.1	118	476	3.8	2,272	71	1,083,394
39	64203	1.6	495	772	2.1	1,383	11	1,068,800
40	60502	2.3	239	539	3.2	1,912	34	1,030,629
41	58402	2.8	232	656	3.1	1,540	33	1,010,975
42	64201	3.4	160	546	4.0	1,843	39	1,007,644
43	43504	3.5	142	499	6.0	2,016	15	1,007,330
44	10502	1.0	920	893	0.7	1,099	29	982,199
45	45801	2.8	133	376	3.0	2,610	64	981,995
46	13601	2.9	280	822	0.1	1,167	45	959,532
47	45502	1.6	941	1,504	2.7	613	16	922,066
48	10602	0.8	880	681	1.0	1,347	47	917,447
49	60801	1.3	894	1,156	0.0	792	18	915,903
50	63801	1.5	409	632	9.1	1,413	26	893,850
51	53101	3.6	121	439	5.0	1,959	41	861,061
52	65503	1.3	320	431	4.0	1,986	28	856,665
53	45501	4.0	146	587	7.0	1,441	49	846,007
54	41801	3.8	261	1,003	3.0	834	28	836,726
55	24602	1.6	343	550	1.0	1,515	49	833,405
56	61304	2.7	194	532	6.2	1,534	31	816,249
57	66001	1.4	449	642	1.0	1,264	11	812,599
58	66703	0.7	771	549	7.1	1,476	30	811,184

WPC Rank	Feeder ID	SAIFI	CAIDI	SAIDI	MAIFI ⁵	Customers	Cases of Trouble ⁶	Customer Minutes Interrupted
59	60701	1.2	316	377	4.0	2,137	25	807,398
60	61801	1.0	496	500	0.0	1,591	35	796,896
61	47201	1.3	355	470	7.0	1,650	34	776,160
62	45001	1.9	235	441	4.3	1,757	45	775,632
63	63602	1.5	315	473	1.0	1,631	47	772,714
64	60301	0.7	736	484	7.8	1,593	38	771,369
65	21601	2.1	193	395	4.0	1,946	45	769,364
66	51601	2.5	168	417	6.5	1,824	21	761,894
67	46301	1.8	411	726	4.0	1,046	38	759,650
68	13704	5.0	97	488	0.0	1,548	42	755,740
69	18502	4.1	102	421	5.2	1,790	61	755,172
70	65401	2.4	170	411	7.1	1,831	18	752,457
71	64202	0.5	1379	722	3.0	1,040	34	751,475
72	43402	2.1	340	715	4.6	1,041	30	744,458
73	57702	1.4	556	800	2.0	923	11	738,606
74	62102	1.1	310	326	2.7	2,257	23	736,412
75	65804	1.2	663	820	1.1	877	10	719,746
76	43201	1.2	607	751	3.1	956	32	718,408
77	24603	1.9	243	460	1.6	1,558	55	717,403
78	64401	2.1	385	791	2.0	904	10	715,340
79	67804	2.0	175	350	1.0	2,020	17	707,111
80	46302	1.6	395	649	1.0	1,082	51	703,131
81	53602	2.4	132	319	3.2	2,194	74	700,792
82	45002	1.4	249	350	3.2	1,945	45	682,446
83	67503	0.8	486	404	5.8	1,674	40	676,328
84	61001	2.9	125	367	8.1	1,837	11	674,727
85	42001	4.6	89	410	3.1	1,621	30	665,180
86	61504	1.8	293	535	7.0	1,165	21	623,357
87	11102	3.3	96	316	3.0	1,969	16	623,154
88	64903	0.6	968	551	8.1	1,130	17	622,743
89	61502	3.2	190	618	9.2	1,004	18	620,568

4) *Specific remedial efforts taken and planned for the worst performing 7.5% of the circuits identified in paragraph (3).*

01 Circuit 56501 -- ROCKVILLE 65-01

Performance Analysis

The ROCKVILLE 65-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On July 8, 2014, 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 2,345 customers for up to 1,196 minutes resulting in 2,803,190 CMI.

In total, the ROCKVILLE 65-01 circuit had 31 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (15); equipment failure (8); animal contacts (5); other (2); nothing found (1).

Remedial Actions

- In 2013, a comprehensive circuit review was completed to identify opportunities for additional fusing to improve SAIFI. No new locations were identified.
- In the third quarter of 2014, the ROCKVILLE 65-01 circuit was trimmed as part of its vegetation management cycle.
- In 2017, a roughly two mile tie line and reconductoring will provide approximately 760 radial customers with an alternate source for sectionalizing during cases of trouble. This tie line has the capability to significantly improve restoration times during outages.
- In 2017, additional sectionalizing devices with remote operator control will be installed.

02 Circuit 64904 -- MILLERSVILLE 49-04

Performance Analysis

The MILLERSVILLE 49-04 circuit experienced five outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 412 customers for up to 1,894 minutes resulting in 780,699 CMI.

On February 5, 2014, 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 699 customers for up to 750 minutes resulting in 523,642 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 92 customers for up to 2,010 minutes resulting in 184,879 CMI.

On February 5, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 1,663 customers for up to 804 minutes resulting in 734,833 CMI.

On July 23, 2014, during a period of lightning, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 425 customers for up to 947 minutes resulting in 402,088 CMI.

In total, the MILLERSVILLE 49-04 circuit had 19 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (9); tree related (9); nothing found (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In the second quarter of 2014, multiple hazard trees were removed in order to prevent potential tree related outages.
- In 2014, PPL Electric initiated a new tie between the MILLERSVILLE 49-04 and the WEST WILLOW 75-05, to allow 700 radial customers to be remotely restored.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed.
- In 2016, three automated switches and one automated vacuum recloser will be installed as part of the Smart Grid Program.

03 Circuit 64101 -- RED FRONT 41-01

Performance Analysis

The RED FRONT 41-01 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 135 customers for up to 2,437 minutes resulting in 329,107 CMI.

On February 5, 2014, 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 714 customers for up to 5,081 minutes resulting in 1,179,654 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 160 customers for up to 4,876 minutes resulting in 717,372 CMI.

In total, the RED FRONT 41-01 circuit had 34 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (24); equipment failure (4); other (2); vehicles (2); animal contacts (1); nothing found (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In 2014, PPL Electric will be investigating the installation of a remotely operated switch at the existing load-break air switch on a tie, to improve restoration times in the case of an outage.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed.

04 Circuit 66202 -- SILVER SPRING 62-02

Performance Analysis

The SILVER SPRING 62-02 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,268 customers for up to 1,829 minutes resulting in 2,353,956 CMI.

In total, the SILVER SPRING 62-02 circuit had 14 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (7); equipment failure (5); contact or dig in (1); other (1).

Remedial Actions

- PPL Electric is currently evaluating the installation of a remotely operated switch at the existing load-break air switch on a tie to improve restoration times in the case of an outage.
- In 2014, full circuit trimming was performed.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid Program.

05 Circuit 64801 -- MOUNT NEBO 48-01

Performance Analysis

The MOUNT NEBO 48-01 circuit experienced five outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 54 customers for up to 3,887 minutes resulting in 209,866 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a temporary open point to be interrupted. This outage affected 63 customers for up to 3,269 minutes resulting in 144,165 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,310 customers for up to 481 minutes resulting in 629,036 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 67 customers for up to 2,464 minutes resulting in 165,085 CMI.

On March 13, 2014, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 526 customers for up to 414 minutes resulting in 218,074 CMI.

In total, the MOUNT NEBO 48-01 circuit had 72 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (54); equipment failure (11); animal contacts (3); nothing found (3); other (1).

Remedial Actions

- In the first quarter of 2014, PPL Electric conducted an infrared inspection of the line. Minor repairs were made.
- In April 2014, several crimps and cross arms were replaced as a result of a line inspection.
- In April 2014, animal guards were installed at several locations as a result of a line inspection.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid Program.
- In 2016, full circuit trimming will be performed.

06 Circuit 65603 -- QUARRYVILLE 56-03

Performance Analysis

The QUARRYVILLE 56-03 circuit experienced five outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 107 customers for up to 3,391 minutes resulting in 362,883 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 98 customers for up to 3,823 minutes resulting in 171,535 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 89 customers for up to 2,044 minutes resulting in 135,762 CMI.

On May 28, 2014, during a period of heavy rain, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 1,012 customers for up to 102 minutes resulting in 103,224 CMI.

On June 19, 2014, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,015 customers for up to 621 minutes resulting in 556,412 CMI.

In total, the QUARRYVILLE 56-03 circuit had 80 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (40); equipment failure (22); animal contacts (9); nothing found (3); vehicles (3); other (2); contact or dig in (1).

Remedial Actions

- In December 2013, PPL Electric conducted an Expanded Operational Review on the circuit. The review focused on line improvements to ensure optimal line performance. Minor improvements were identified and implemented.
- In 2014, an existing manual switch was replaced with a remote operated vacuum recloser switch.
- In 2014, PPL Electric will be investigating at tie between the QUARRYVILLE 56-3 and the QUARRYVILLE 56-2 to add additional sectionalizing capabilities in the area.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2016, full circuit trimming will be performed.
- In November 2016, PPL Electric will be re-configuring the circuit to lower the customer count and circuit mileage of the line. This project will help minimize the number of customers affected by an outage and improve the overall reliability of the circuit.
- In 2016, two new manual switches and two reclosers will be installed as part of the Smart Grid Program.
- In 2016, PPL Electric will be constructing a new circuit out of the Quarryville substation. The new line will further reduce the customer count and circuit mileage of the line.

07 Circuit 63404 -- HONEYBROOK 34-04

Performance Analysis

The HONEYBROOK 34-04 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 1,071 customers for up to 3,824 minutes resulting in 1,928,792 CMI.

In total, the HONEYBROOK 34-04 circuit had 20 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (10); animal contacts (6); equipment failure (3); nothing found (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In 2014, PPL Electric will be constructing a tie line between the HONEYBROOK 34-02 and HONEYBROOK 34-04 lines. This project will improve sectionalizing capability in the area and help to reduce future outage durations.

08 Circuit 64802 -- MOUNT NEBO 48-02

Performance Analysis

The MOUNT NEBO 48-02 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a temporary open point to be interrupted. This outage affected 44 customers for up to 4,862 minutes resulting in 158,667 CMI.

On February 5, 2014, 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 56 customers for up to 3,769 minutes resulting in 211,076 CMI.

On February 5, 2014, 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 98 customers for up to 2,780 minutes resulting in 150,358 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 752 customers for up to 5,079 minutes resulting in 1,230,407 CMI.

In total, the MOUNT NEBO 48-02 circuit had 52 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (33); equipment failure (8); animal contacts (7); vehicles (3); nothing found (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In the first quarter of 2014, PPL Electric conducted an infrared inspection of the line. Nothing was found during the review.
- In the third quarter of 2014, a section of single-phase primary cable was relocated to improve its accessibility.
- In December 2014, series fusing will be investigated for a single tap that experienced multiple outages in the previous four quarters.

09 Circuit 60803 -- BUCK 08-03

Performance Analysis

The BUCK 08-03 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 1,915 customers for up to 1,912 minutes resulting in 1,049,895 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,316 customers for up to 940 minutes resulting in 635,609 CMI.

In total, the BUCK 08-03 circuit had 33 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (15); equipment failure (10); vehicles (4); animal contacts (2); nothing found (2).

Remedial Actions

- In December 2013, PPL Electric conducted an Expanded Operational Review on the circuit. The review focused on line improvements to ensure optimal line performance. There was nothing significant found in the study.
- In 2014, full circuit trimming was performed.
- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In February 2014, PPL Electric conducted a thermography inspection on the overhead two and three-phase sections of the circuit. Nothing was found in the study.
- In January 2014, a field patrol of the circuit was conducted. Minor repairs were identified and completed.
- In 2014, PPL Electric investigated locations with vehicle pole hits. No opportunities were found that would reduce the number of pole hits.
- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch were installed as part of the Smart Grid program.
- In 2014, a section of inaccessible line will be relocated to a more accessible location along a public road. This project will allow future repairs to be made more quickly and help reduce the duration of outages.
- In 2014, single-phase lines with multiple interruptions will be considered for additional fusing.
- In 2016, a project is planned to extend a section of three-phase, and to remove a section of inaccessible three-phase in the right of way.
- In 2016, a remote operated vacuum recloser will be installed to reduce customer exposure to outages.
- In November 2016, PPL Electric will be re-configuring this circuit to lower the customer count and circuit mileage of the line. This project will also help minimize the number of customers affected by an outage and improve the overall reliability of the circuit.

10 Circuit 67401 -- WAKEFIELD 74-01

Performance Analysis

The WAKEFIELD 74-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 1,365 customers for up to 2,406 minutes resulting in 1,595,414 CMI.

On July 8, 2014, during a period of heavy rain, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 232 customers for up to 545 minutes resulting in 126,229 CMI.

In total, the WAKEFIELD 74-01 circuit had 27 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (12); tree related (8); animal contacts (3); nothing found (2); contact or dig in (1); other (1).

Remedial Actions

- In 2015, PPL Electric plans to replace several spans of old, three-phase conductor.
- A mid-line air break switch will be upgraded to an automatic recloser and a remotely operated switch on a tie will be installed in 2015 as part of the Smart Grid program.
- In 2017, full circuit trimming will be performed.

11 Circuit 65702 -- ROSEVILLE 57-02

Performance Analysis

The ROSEVILLE 57-02 circuit experienced five outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 77 customers for up to 3,540 minutes resulting in 262,023 CMI.

On February 5, 2014, 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 63 customers for up to 3,606 minutes resulting in 227,126 CMI.

On February 5, 2014, 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 180 customers for up to 2,076 minutes resulting in 364,718 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 96 customers for up to 3,211 minutes resulting in 308,234 CMI.

On February 5, 2014, 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 144 customers for up to 2,263 minutes resulting in 325,994 CMI.

In total, the ROSEVILLE 57-02 circuit had 41 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (31); animal contacts (4); equipment failure (3); nothing found (2); contact or dig in (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In 2014, fuses were installed on two single-phase taps.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2018, full circuit trimming will be performed.

12 Circuit 43202 -- MILLVILLE 32-02

Performance Analysis

The MILLVILLE 32-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On July 8, 2014, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 856 customers for up to 3,193 minutes resulting in 1,255,183 CMI.

On July 9, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 115 customers for up to 1,711 minutes resulting in 196,758 CMI.

In total, the MILLVILLE 32-02 circuit had 37 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (22); equipment failure (6); nothing found (4); animal contacts (3); contact or dig in (1); vehicles (1).

Remedial Actions

- A project was completed in December, 2013, that extended the three-phase backbone of the MILLVILLE 32-02 and created a Smart Grid tie with the HUGHESVILLE 70-01. The tie will be automated and two additional Smart Grid sectionalizing devices will be installed.
- In September, 2014, a project was completed which built approximately 2100 feet of new single-phase to serve customers that experienced frequent interruptions from a more reliable tap, and to remove inaccessible line.
- A project has been developed to rebuild the three-phase backbone of the MILLVILLE 32-02. Approximately 8500 feet of larger capacity conductor will be installed on the MILLVILLE 32-02. This project is scheduled to be completed in the fourth quarter of 2015.

13 Circuit 43103 -- SOUTH MILTON 31-03

Performance Analysis

The SOUTH MILTON 31-03 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On April 5, 2014, an equipment failure occurred on an overhead switch causing a recloser to trip to lockout. This outage affected 1,012 customers for up to 235 minutes resulting in 122,579 CMI.

On July 3, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,015 customers for up to 148 minutes resulting in 150,220 CMI.

On July 8, 2014, 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 1,012 customers for up to 2,497 minutes resulting in 994,545 CMI.

In total, the SOUTH MILTON 31-03 circuit had 46 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (17); tree related (17); animal contacts (7); nothing found (4); vehicles (1).

Remedial Actions

- In May 2014, a three-phase recloser was replaced with a Smart Grid recloser.

- In July 2014, a line inspection was conducted. One trouble location was identified where vines were growing on poles. This location was remediated.
- In August 2014, a line patrol of the circuit was conducted and infrared imaging of potential hot spot areas was performed. Problems were identified on secondary services and will be repaired.
- In August 2014 a recloser that operated on multiple occasions was thoroughly inspected. A wiring problem in the control circuitry was identified and immediately repaired.
- In August 2014, two new Smart Grid switches were installed and three existing switches were upgraded to Smart Grid switches.
- In September 2014, trimming was completed on the three-phase line downstream of a recloser that previously operated on multiple occasions.
- The circuit was approved for additional trimming and hazard tree removal on a section of single-phase. This work will be completed by November 2014.
- In 2015, a new recloser will be added to protect a radial three-phase tap with 163 customers.
- In 2016, additional single-phase fusing will be installed.

14 Circuit 63402 -- HONEYBROOK 34-02

Performance Analysis

The HONEYBROOK 34-02 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On November 5, 2013, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 1,991 customers for up to 75 minutes resulting in 149,863 CMI.

On February 4, 2014, 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 1,260 customers for up to 5,804 minutes resulting in 1,321,918 CMI.

On July 28, 2014, during a period of strong wind, an unidentified issue occurred with a substation component causing a circuit breaker to trip to lockout. This outage affected 1,894 customers for up to 773 minutes resulting in 221,375 CMI.

In total, the HONEYBROOK 34-02 circuit had 23 outages between October 2013 and September 2014, with the causes breaking down as follows: animal contacts (8); tree related (6); equipment failure (5); other (2); nothing found (1); vehicles (1).

Remedial Actions

- In 2015, full circuit trimming will be performed.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2016, PPL Electric will be constructing a tie between the HONEYBROOK 34-02 and the HONEYBROOK 34-04 lines in order to reduce outage durations.

15 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On November 30, 2013, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,725 customers for up to 555 minutes resulting in 694,763 CMI.

On June 12, 2014, during a period of heavy rain, an equipment failure occurred on an overhead switch causing a recloser to trip to lockout. This outage affected 1,118 customers for up to 159 minutes resulting in 178,623 CMI.

In total, the GREEN PARK 24-02 circuit had 66 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (25); tree related (25); animal contacts (9); other (4); nothing found (2); vehicles (1).

Remedial Actions

- In the third quarter of 2013, additional fusing was installed at two locations in order to reduce customer exposure.
- In the fourth quarter of 2013, two failed reclosers were replaced.
- In the first quarter of 2014, the GREEN PARK 24-02 getaway was reconductored to alleviate cold load pick up concerns.
- In the second quarter of 2014, two vintage oil circuit reclosers were replaced with vacuum reclosers on a CEMI customer tap. This will allow for better device coordination and limit the impact of outages for 200 customers.
- In 2015, a roughly 4,000 foot single-phase extension will transfer approximately 50 high CEMI customers to an adjacent circuit to limit line and outage exposure.

- In 2016, additional sectionalizing devices will be installed or upgraded as part of the Smart Grid initiative. This will allow for the remote troubleshooting of trouble locations and faster restoration times.
- In 2016, the Green Park 24-02 circuit is scheduled to be trimmed as part of its vegetation management cycle.
- In 2017, a three mile tie line will provide approximately 1,120 radial customers with an alternate source for sectionalizing during cases of trouble.

16 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced six outages of over 100,000 CMI between October 2013 and September 2014.

On December 5, 2013, a vehicle contact caused a recloser to trip to lockout. This outage affected 713 customers for up to 570 minutes resulting in 220,513 CMI.

On July 2, 2014, an unidentified issue occurred causing a circuit breaker to trip to lockout. This outage affected 1,817 customers for up to 63 minutes resulting in 105,150 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 136 customers for up to 1,542 minutes resulting in 209,674 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,500 customers for up to 212 minutes resulting in 232,755 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 624 customers for up to 1,585 minutes resulting in 860,803 CMI.

On August 7, 2014, an equipment failure occurred causing a circuit breaker to trip to lockout. This outage affected 1,813 customers for up to 234 minutes resulting in 205,150 CMI.

In total, the SULLIVAN TRAIL 58-01 circuit had 41 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (20); animal contacts (7); equipment failure (7); nothing found (5); other (1); vehicles (1).

Remedial Actions

- In October of 2014, full circuit trimming was performed.
- By the end of 2014, SCADA will be installed at the Sullivan Trail substation.
- A project is planned to perform maintenance and repairs on the inspection bus at the Sullivan Trail substation.
- By end of 2014, an expanded operation review will be completed on this circuit. Any issues identified during this review will be addressed.
- A tie between two portions of the Sullivan Trail circuit is being reviewed as a potential project.
- Fault indicator locations are being reviewed to help troubleshoot during outages.
- A switch without remote operable capability is being replaced with a recloser in closed switch mode to enable remote operable capability.

17 Circuit 41902 -- REED 19-02

Performance Analysis

The REED 19-02 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On October 12, 2013, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 386 customers for up to 322 minutes resulting in 108,346 CMI.

On December 22, 2013, 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 1,389 customers for up to 909 minutes resulting in 413,065 CMI.

On March 30, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 1,313 customers for up to 2,644 minutes resulting in 1,007,989 CMI.

In total, the REED 19-02 circuit had 32 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (17); equipment failure (7); animal contacts (6); nothing found (1); other (1).

Remedial Actions

- Spans of copper-weld copper were reconductored at the end of 2013. The remaining spans will continue to be reconductored throughout 2014. In areas where possible, spans

will be relocated to more accessible locations. The reconductoring will improve the load and transfer capability of the circuit.

- Hot spot tree trimming was performed in the first quarter of 2014 on two sections of three-phase line that experienced multiple interruptions due to tree contact.
- Fault indicators were installed in 2014 on a single-phase tap experiencing outages.
- An expanded operational review is scheduled for this circuit by the end of the year.
- Solid blade disconnects and fault indicators were installed on a three-phase tap that experienced a recent outage. These will be used to quickly identify the outage location and isolate a damaged section of line.
- Two remotely operable sectionalizing devices will be installed by the end of 2014 under the Smart Grid program. This will improve sectionalizing and reduce the number of customers affected by future outages.
- A full circuit tree trim is scheduled for 2015.

18 Circuit 62105 -- EAST LANCASTER 21-05

Performance Analysis

The EAST LANCASTER 21-05 circuit experienced five outages of over 100,000 CMI between October 2013 and September 2014.

On November 26, 2013, an equipment failure occurred on an overhead switch causing a recloser to trip to lockout. This outage affected 997 customers for up to 211 minutes resulting in 194,873 CMI.

On February 5, 2014, 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 990 customers for up to 349 minutes resulting in 344,995 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 79 customers for up to 3,264 minutes resulting in 174,563 CMI.

On February 5, 2014, 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 69 customers for up to 1,985 minutes resulting in 136,962 CMI.

On September 21, 2014, an equipment failure occurred on a substation switch causing a circuit breaker to trip to lockout. This outage affected 1,436 customers for up to 342 minutes resulting in 407,947 CMI.

In total, the EAST LANCASTER 21-05 circuit had 25 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (17); equipment failure (6); animal contacts (2).

Remedial Actions

- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In March 2014, a three-phase slack span which had the potential to cause outages was re-sagged.
- In 2014, full circuit trimming was performed.
- A root cause investigation is currently being conducted to analyze recent underground getaway failures.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

19 Circuit 65004 -- NEFFSVILLE 50-04

Performance Analysis

The NEFFSVILLE 50-04 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 76 customers for up to 3,609 minutes resulting in 274,276 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,144 customers for up to 815 minutes resulting in 931,857 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 48 customers for up to 2,577 minutes resulting in 123,689 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 44 customers for up to 2,909 minutes resulting in 127,967 CMI.

In total, the NEFFSVILLE 50-04 circuit had 16 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (9); equipment failure (4); animal contacts (2); other (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In late 2014, additional fusing will be installed on several single-phase taps.
- In 2015, single-phase customers will be transferred from the NEFFSVILLE 50-04 to the East Petersburg 15-04 line. This will reduce exposure to the trees for those customers.

20 Circuit 61701 -- ELIZABETHTOWN 17-01

Performance Analysis

The ELIZABETHTOWN 17-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 812 customers for up to 3,504 minutes resulting in 1,351,313 CMI.

In total, the ELIZABETHTOWN 17-01 circuit had 12 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (6); tree related (3); animal contacts (2); contact or dig in (1).

Remedial Actions

- PPL Electric is currently investigating ties between the ELIZABETHTOWN 17-03 and ELIZABETHTOWN 17-02 lines to provide opportunities to improve sectionalizing capabilities.
- In 2015, full circuit trimming will be performed.

21 Circuit 57304 -- MOUNT ALLEN 73-04

Performance Analysis

The MOUNT ALLEN 73-04 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,517 customers for up to 566 minutes resulting in 679,167 CMI.

On July 8, 2014, during a period of strong wind, an unidentified issue occurred with a substation component causing a circuit breaker to trip to lockout. This outage affected 1,545 customers for up to 139 minutes resulting in 213,627 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 87 customers for up to 2,246 minutes resulting in 195,363 CMI.

In total, the MOUNT ALLEN 73-04 circuit had 32 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (19); equipment failure (7); animal contacts (2); nothing found (2); vehicles (2).

Remedial Actions

- In the first quarter of 2014, three reclosers were upgraded to include remote operator control.
- In the second quarter of 2014, an existing sectionalizing device was upgraded as part of the Smart Grid initiative. The device allows for the remote transfer of approximately half the customers to an adjacent circuit.
- In the third quarter of 2014, the MOUNT ALLEN 73-04 circuit was trimmed as part of its vegetation management cycle.

22 Circuit 65802 -- ROHRERSTOWN 58-02

Performance Analysis

The ROHRERSTOWN 58-02 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 65 customers for up to 2,271 minutes resulting in 147,570 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead switch causing a load break fuse to operate. This outage affected 69 customers for up to 1,662 minutes resulting in 114,655 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,171 customers for up to 109 minutes resulting in 127,780 CMI.

On February 5, 2014, 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 529 customers for up to 4,852 minutes resulting in 563,852 CMI.

In total, the ROHRERSTOWN 58-02 circuit had 38 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (22); animal contacts (10); equipment failure (4); nothing found (1); vehicles (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2014, multiple hazard trees on single-phase lines were removed.
- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- Animal guards will be installed on distribution transformers in areas historically prone to animal outages.
- In 2016, the substation will be animal guarded.

23 Circuit 14602 -- SO WHITEHALL 46-02

Performance Analysis

The SO WHITEHALL 46-02 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On November 1, 2013, during a period of strong wind, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,703 customers for up to 116 minutes resulting in 197,872 CMI.

On November 1, 2013, 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 1,703 customers for up to 260 minutes resulting in 331,216 CMI.

On February 1, 2014, a vehicle made contact with a pole causing a recloser to trip to lockout. This outage affected 1,664 customers for up to 1,041 minutes resulting in 516,210 CMI.

On July 14, 2014, a vehicle contact caused a circuit breaker to trip to lockout. This outage affected 1,672 customers for up to 101 minutes resulting in 233,459 CMI.

In total, the SO WHITEHALL 46-02 circuit had nine outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (3); animal contacts (2); vehicles (2); nothing found (1); tree related (1).

Remedial Actions

- In July, 2014, six new Smart Grid devices were installed.
- In November, 2014, two additional Smart Grid devices will be installed.
- In November, 2018, a new line will be installed at the Mickely substation which will reduce the customer count on this circuit and provide an additional tie.

24 Circuit 62607 -- ENGLSIDE 26-07

Performance Analysis

The ENGLSIDE 26-07 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 187 customers for up to 2,487 minutes resulting in 450,796 CMI.

On February 5, 2014, 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 243 customers for up to 2,009 minutes resulting in 488,044 CMI.

In total, the ENGLSIDE 26-07 circuit had 32 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (22); animal contacts (5); equipment failure (4); nothing found (1).

Remedial Actions

- In 2014, PPL Electric will be investigating the feasibility of installing fuses on three single-phase taps beyond a recloser that operated during the ice storm and caused the largest outage on the line.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2016, five new automated switches will be installed as part of its Smart Grid Program.
- In 2016, full circuit trimming will be performed.
- In 2016, a new line and terminal will be constructed out of the East Lancaster substation to transfer customers off of the ENGLSIDE 26-07.

25 Circuit 22001 -- BOHEMIA 20-01

Performance Analysis

The BOHEMIA 20-01 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On December 6, 2013, during a period of heavy rain, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,356 customers for up to 154 minutes resulting in 354,693 CMI.

On January 6, 2014, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,287 customers for up to 61 minutes resulting in 140,353 CMI.

On February 6, 2014, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 2,291 customers for up to 106 minutes resulting in 242,617 CMI.

On April 18, 2014, an equipment failure occurred on an overhead lightning protector causing a circuit breaker to trip to lockout. This outage affected 2,301 customers for up to 170 minutes resulting in 391,791 CMI.

In total, the BOHEMIA 20-01 circuit had 44 outages between October 2013 and September 2014, with the causes breaking down as follows: animal contacts (15); equipment failure (13); tree related (8); nothing found (7); other (1).

Remedial Actions

- In 2013, full circuit trimming was performed.
- In 2014, two single-phase reclosers were replaced with two sectionalizers to improve circuit protection.
- In 2014, a new line out of the Bohemia 69/12 kV substation will be constructed. The new line will reduce customer count, improve sectionalizing capabilities, and reduce outage exposure.
- In 2014, a line patrol will be conducted to identify potential animal guard locations.
- In 2017, full circuit trimming will be performed.

26 Circuit 67502 – WEST WILLOW 75-02

Performance Analysis

The WEST WILLOW 75-02 circuit experienced five outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 44 customers for up to 3,214 minutes resulting in 112,653 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 38 customers for up to 3,641 minutes resulting in 138,324 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 255 customers for up to 977 minutes resulting in 249,069 CMI.

On February 5, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 157 customers for up to 2,433 minutes resulting in 361,999 CMI.

On February 6, 2014, 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 157 customers for up to 26,238 minutes resulting in 157,458 CMI.

In total, the WEST WILLOW 75-02 circuit had 23 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (15); equipment failure (6); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2017, full circuit trimming will be performed.

27 Circuit 28604 -- BLYTHEBURN 86-04

Performance Analysis

The BLYTHEBURN 86-04 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On April 15, 2014, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,957 customers for up to 645 minutes resulting in 1,194,856 CMI.

In total, the BLYTHEBURN 86-04 circuit had 30 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (11); equipment failure (9); animal contacts (5); vehicles (3); nothing found (2).

Remedial Actions

- In the third quarter of 2014, full circuit trimming was performed.
- A project to reconductor an existing tie between the BLYTHEBURN 86-04 and SAINT JOHN'S 03-02 is planned for 2017. The improved tie capability will provide additional transfer options to both circuits.
- A project to install a new tie between the BLYTHEBURN 86-04 and BLYTHEBURN 86-02 is under review. The project will provide a tie to customers who are currently radial on the BLYTHEBURN 86-04.
- A project is planned to install fusing at multiple locations on the BLYTHEBURN 86-04 circuit. This will help reduce the number of customers affected in the event of an outage.

28 Circuit 63403 -- HONEYBROOK 34-03

Performance Analysis

The HONEYBROOK 34-03 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On November 5, 2013, an equipment failure occurred causing a circuit breaker to trip to lockout. This outage affected 1,485 customers for up to 77 minutes resulting in 103,388 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,442 customers for up to 5,062 minutes resulting in 1,032,260 CMI.

In total, the HONEYBROOK 34-03 circuit had 29 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (9); tree related (9); animal contacts (8); nothing found (2); vehicles (1).

Remedial Actions

- In 2013, full circuit trimming was performed.
- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2014, PPL Electric will be investigating a future project to reconductor a portion of the line.
- In 2015, additional fuses will be installed to reduce outage exposure to customers.
- In 2017, full circuit trimming will be performed.

29 Circuit 67402 -- WAKEFIELD 74-02

Performance Analysis

The WAKEFIELD 74-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 302 customers for up to 2,025 minutes resulting in 611,399 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 301 customers for up to 1,213 minutes resulting in 364,848 CMI.

In total, the WAKEFIELD 74-02 circuit had 38 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (15); equipment failure (12); nothing found (5); animal contacts (3); vehicles (2); other (1).

Remedial Actions

- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program
- In September 2014, a recloser was replaced with a new automated vacuum recloser.
- In the second quarter of 2014, a section of single-phase was extended and inaccessible conductor removed.

- In 2014, PPL Electric will be investigating a project to transfer a group of single-phase customers to another section of the line with less exposure.
- In 2015, full circuit trimming will be performed.

30 Circuit 60901 -- DONEGAL 09-01

Performance Analysis

The DONEGAL 09-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,139 customers for up to 4,910 minutes resulting in 953,255 CMI.

In total, the DONEGAL 09-01 circuit had 33 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (14); equipment failure (13); animal contacts (2); nothing found (2); vehicles (2).

Remedial Actions

- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In the second quarter of 2014, load break disconnects were installed on a getaway riser pole to improve future switching capabilities on the line.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

31 Circuit 66203 -- SILVER SPRING 62-03

Performance Analysis

The SILVER SPRING 62-03 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 954 customers for up to 1,666 minutes resulting in 683,219 CMI.

On July 8, 2014, 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 951 customers for up to 326 minutes resulting in 310,026 CMI.

In total, the SILVER SPRING 62-03 circuit had 14 outages between October 2013 and September 2014, with the causes breaking down as follows: animal contacts (4); equipment failure (4); tree related (4); other (1); vehicles (1).

Remedial Actions

- In 2015, a remotely operable vacuum recloser and tie air break switches will be installed as part of the Smart Grid Program.
- In 2016, full circuit trimming will be performed.

32 Circuit 47502 -- NEW COLUMBIA 75-02

Performance Analysis

The NEW COLUMBIA 75-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On July 3, 2014, during a period of lightning, an equipment failure occurred on a pole or pole arm causing an interruption. This outage affected 677 customers for up to 393 minutes resulting in 266,298 CMI.

On July 8, 2014, 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 795 customers for up to 2,802 minutes resulting in 802,942 CMI.

In total, the NEW COLUMBIA 75-02 circuit had 14 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (6); animal contacts (3); tree related (2); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In June 2014, an existing tie switch between the NEW COLUMBIA 75-02 and the WATSON 33-02 was upgraded to a Smart Grid switch.
- In 2015, an existing tie switch between the NEW COLUMBIA 75-02 and the NEW COLUMBIA 75-01 will be upgraded to a Smart Grid switch.

- In 2015, a project is planned to create a tie between the NEW COLUMBIA 75-02 and the SOUTH MILTON 31-05 circuits. This project will provide an additional remotely operable tie for the NEW COLUMBIA 75-02.

33 Circuit 60605 -- NORTH COLUMBIA 06-05

Performance Analysis

The NORTH COLUMBIA 06-05 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 205 customers for up to 4,930 minutes resulting in 406,936 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a temporary open point to be interrupted. This outage affected 35 customers for up to 3,669 minutes resulting in 128,395 CMI.

On July 8, 2014, 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 1,396 customers for up to 351 minutes resulting in 488,768 CMI.

In total, the NORTH COLUMBIA 06-05 circuit had 25 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (10); tree related (10); animal contacts (2); vehicles (2); nothing found (1).

Remedial Actions

- In 2013, full circuit trimming was performed.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2016, PPL Electric will be investigating adding another sectionalizing device on a three-phase tap.
- In 2017, full circuit trimming will be performed.

34 Circuit 21401 -- EXETER 14-01

Performance Analysis

The EXETER 14-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,538 customers for up to 954 minutes resulting in 1,101,058 CMI.

In total, the EXETER 14-01 circuit had nine outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (4); tree related (4); animal contacts (1).

Remedial Actions

- A project is being reviewed to install solid blade disconnects in order to provide additional sectionalizing capability.
- A project to tie the EXETER 14-01 to the EXETER 14-02 is scheduled for 2016. This will provide a tie to the radial customers on both the EXETER 14-01 and EXETER 14-02.
- Two remotely operable sectionalizing devices will be installed in 2015 under the Smart Grid program. This will improve sectionalizing and reduce the number of customers affected by future outages.
- Three remotely operable sectionalizing devices will be installed in 2016 under the Smart Grid program. This will improve sectionalizing and reduce the number of customers affected by future outages.

35 Circuit 46902 -- MONTGOMERY 69-02

Performance Analysis

The MONTGOMERY 69-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On March 17, 2014, an equipment failure occurred on an overhead splice causing a recloser to trip to lockout. This outage affected 1,834 customers for up to 367 minutes resulting in 544,725 CMI.

On March 17, 2014, an equipment failure occurred on an overhead splice causing a temporary open point to be interrupted. This outage affected 2,543 customers for up to 245 minutes resulting in 455,592 CMI.

In total, the MONTGOMERY 69-02 circuit had 5 outages between October 2013 and September 2014, with the causes breaking down as follows: animal contacts (2); equipment failure (2); vehicles (1).

Remedial Actions

- In March, 2014, line patrols of the circuit were conducted and infrared imaging of potential hot spot areas was performed. Two potential problems were identified during the infrared inspection and were immediately repaired.
- In 2015, a switch between the MONTGOMERY 69-02 and MONTGOMERY 69-03 circuits will be upgraded to a Smart Grid switch.
- In 2017, a project has been developed to build a new substation at the Great Stream Commons Business Park. This project will provide additional transfer capacity in the area which will reduce the load on the Watson 33-01 when it is carrying the MONTGOMERY 69-02 and MONTGOMERY 69-03 circuits during substation maintenance.

36 Circuit 63401 -- HONEYBROOK 34-01

Performance Analysis

The HONEYBROOK 34-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 657 customers for up to 3,641 minutes resulting in 1,015,304 CMI.

In total, the HONEYBROOK 34-01 circuit had 18 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (6); animal contacts (5); tree related (5); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

- In quarter four of 2014, PPL Electric will be investigating additional fusing opportunities in order to mitigate outage exposure to customers.

37 Circuit 56504 -- ROCKVILLE 65-04

Performance Analysis

The ROCKVILLE 65-04 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 470 customers for up to 1,330 minutes resulting in 389,983 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 233 customers for up to 2,438 minutes resulting in 335,265 CMI.

In total, the ROCKVILLE 65-04 circuit had 61 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (34); equipment failure (12); animal contacts (11); nothing found (3); vehicles (1).

Remedial Actions

- In 2013, the circuit was trimmed as part of its vegetation management cycle.
- In 2013, a section of line was recondored between the ROCKVILLE 65-04 and LINGLESTOWN 20-04 circuits in order to provide a full capacity tie.
- In the third quarter of 2013, additional fusing was installed at three locations.
- In 2015, a roughly one mile stretch of circuit is scheduled to be recondored in order to mitigate vegetation outages experienced by high CEMI customers.
- In 2016, four additional sectionalizing devices will be installed or upgraded with remote operator control as part of Smart Grid. This will allow for the remote troubleshooting of trouble locations and faster restoration times.

38 Circuit 28301 -- NEWFOUNDLAND 83-01

Performance Analysis

The NEWFOUNDLAND 83-01 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On November 18, 2013, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,387 customers for up to 627 minutes resulting in 196,245 CMI.

On April 25, 2014, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 2,260 customers for up to 71 minutes resulting in 160,415 CMI.

On August 21, 2014, during a period of lightning, an equipment failure occurred on an overhead conductor causing a temporary open point to be interrupted. This outage affected 1,883 customers for up to 415 minutes resulting in 455,511 CMI.

In total, the NEWFOUNDLAND 83-01 circuit had 71 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (28); animal contacts (15); equipment failure (15); nothing found (10); other (2); Improper Design (1).

Remedial Actions

- In July 2013, construction was completed on the new LEDGEDALE 69/12 kV substation with three new 12 kV lines. This will improve sectionalizing capabilities and reduce outage exposure to outages.
- In May 2014, a sectionalizer was replaced with an automated vacuum recloser switch.
- In May 2014, the NEWFOUNDLAND 83-01 to HAMLIN 87-01 tie switch was replaced with an automated vacuum recloser switch. This automation will reduce future outage durations and improve sectionalizing capability.
- In 2014, viability of a new single-phase sectionalizing device to limit customer exposure to outages will be investigated.
- In 2014, a field walk down of the circuit will be conducted in order to identify potential opportunities to mitigate possible future outages.
- In 2014, the reliability benefits of building a new line and terminal that would reduce the customer count and outage exposure will be investigated.
- In 2014, animal guarding will be evaluated for several sections of the circuit.

- In November 2015, a section of single-phase line will be relocated to move sixty customers that experienced multiple interruptions to a more reliable source.
- In 2015, a new VCR switch will be installed as part of the Smart Grid Program.
- In 2015, a section of single-phase line will be relocated to benefit fifty-one customers that experienced multiple interruptions.
- In 2015, a section of single-phase line will be reconfigured to reduce customer exposure to possible future outages.
- In 2017, full circuit trimming will be performed.

39 Circuit 64203 -- KINZER 42-03

Performance Analysis

The KINZER 42-03 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a transformer to be interrupted. This outage affected 1,052 customers for up to 2,083 minutes resulting in 860,733 CMI.

On February 7, 2014, during a period of ice/sleet/snow, a vehicle contact caused a recloser to trip to lockout. This outage affected 1,052 customers for up to 470 minutes resulting in 181,769 CMI.

In total, the KINZER 42-03 circuit had 11 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (3); tree related (3); animal contacts (2); vehicles (2); contact or dig in (1).

Remedial Actions

- In 2013, an expanded operational review was performed on the circuit. Minor repairs were completed as a result.
- In 2014, PPL locations that experienced multiple vehicle hits were investigated. No remedial actions identified as a result of the review.
- In quarter three of 2014, the double circuit was replaced with a larger conductor.
- In 2014, the substation was animal guarded.
- In 2014, the 69 kV air break switch at the substation was replaced
- In 2015, full circuit trimming will be performed.
- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

- In 2015, PPL Electric will begin rebuilding the FACE ROCK-KINZER transmission line. The project will reduce the possibility of future transmission outages.

40 Circuit 60502 -- NORTH MANHEIM 05-02

Performance Analysis

The NORTH MANHEIM 05-02 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,866 customers for up to 458 minutes resulting in 767,599 CMI.

In total, the NORTH MANHEIM 05-02 circuit had 34 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (15); animal contacts (8); equipment failure (6); nothing found (3); other (1); vehicles (1).

Remedial Actions

- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In the fourth quarter of 2014, a pole with multiple vehicle hits will be relocated to a less vulnerable location.
- In the fourth quarter of 2014, PPL Electric will be constructing a reliability project to reduce the number of outages for customers that have experienced multiple interruptions. This project will also provide a strong tie to reduce overall outage durations for over 1,000 customers on this line.
- In 2016, full circuit trimming will be performed.

41 Circuit 58402 -- MOUNT ROCK 84-02

Performance Analysis

The MOUNT ROCK 84-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On January 7, 2014, during a period of extreme temperatures, an equipment failure occurred on a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,544 customers for up to 316 minutes resulting in 279,743 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,532 customers for up to 155 minutes resulting in 538,103 CMI.

In total, the MOUNT ROCK 84-02 circuit had 33 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (15); tree related (13); nothing found (3); animal contacts (1); other (1).

Remedial Actions

- In the third quarter of 2013, additional fusing was installed at four locations.
- In 2015, three additional sectionalizing devices will be installed or upgraded as part of the Smart Grid initiative. This will allow for the remote troubleshooting of trouble locations and faster restoration times.
- In 2016, the MOUNT ROCK 84-02 circuit is scheduled to be trimmed as part of its vegetation management cycle.

42 Circuit 64201 -- KINZER 42-01

Performance Analysis

The KINZER 42-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 298 customers for up to 4,689 minutes resulting in 483,117 CMI.

On June 12, 2014, during a period heavy rain, an equipment failure occurred on a substation switch causing a circuit breaker to trip to lockout. This outage affected 1,842 customers for up to 368 minutes resulting in 119,794 CMI.

In total, the KINZER 42-01 circuit had 39 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (12); vehicles (12); equipment failure (11); animal contacts (2); nothing found (2).

Remedial Actions

- In 2014, an inspection was performed on areas with multiple vehicle hits in order to identify potential projects. Upon the completion of the inspection no viable projects were identified.
- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2014, animal guarding will be installed at the substation.
- In 2014, the air break switch at the substation was replaced.
- In the fourth quarter of 2014, full circuit trimming will be performed.
- In 2015, PPL Electric will be constructing a new tie line between the KINZER 42-01 and KINZER 42-02 circuits.

43 Circuit 43504 -- W WILLIAMSPORT 35-04

Performance Analysis

The W WILLIAMSPORT 35-04 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On July 3, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,032 customers for up to 514 minutes resulting in 307,145 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,032 customers for up to 115 minutes resulting in 144,604 CMI.

On July 9, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,030 customers for up to 456 minutes resulting in 435,921 CMI.

On July 15, 2014, an equipment failure occurred on an overhead conductor causing a transformer to be interrupted. This outage affected 916 customers for up to 327 minutes resulting in 103,789 CMI.

In total, the W WILLIAMSPORT 35-04 circuit had 15 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (6); tree related (6); animal contacts (3).

Remedial Actions

- In 2014, an Expanded Operational Review (EOR) was completed on this circuit. As a result of the EOR, plans were created to install single-phase fusing at 5 locations. This work is scheduled for December 2014.
- In July 2014, a line patrol and infrared imaging of potential hot spots was conducted. Two hot spots were identified and repairs were completed in September 2014.
- Two existing switches are scheduled to be upgraded to Smart Grid switches and one existing recloser will be upgraded to a Smart Grid recloser. This work is scheduled for 2015.
- A project has been approved to create a tie for a radial section of this circuit. This tie project is currently scheduled to be completed in 2016.

44 Circuit 10502 -- CRACKERSPORT 05-02

Performance Analysis

The CRACKERSPORT 05-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On June 17, 2014, an equipment failure occurred on an underground vault causing an underground elbow to be interrupted. This outage affected 5 customers for up to 103,353 minutes resulting in 516,763 CMI.

On July 8, 2014, during a period of lightning, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 716 customers for up to 541 minutes resulting in 368,680 CMI.

In total, the CRACKERSPORT 05-02 circuit had 29 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (11); equipment failure (10); animal contacts (5); nothing found (2); other (1).

Remedial Actions

- In June, 2015, a midline Smart Grid device will be installed.
- In 2016, two Smart Grid tie devices will be installed.
- In 2016, several single-phase and three-phase sectionalizing devices will be installed to allow for isolation of trouble locations.
- In 2017, two additional Smart Grid devices will be installed, sectionalizing the line into 500 customer blocks.

45 Circuit 45801 -- HEGINS 58-01

Performance Analysis

The HEGINS 58-01 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On March 30, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead transmission component causing a recloser to trip to lockout. This outage affected 2,605 customers for up to 1,365 minutes resulting in 373,300 CMI.

On May 10, 2014, a vehicle contact caused a recloser to trip to lockout. This outage affected 957 customers for up to 121 minutes resulting in 115,548 CMI.

On July 3, 2014, during a period of strong wind, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,613 customers for up to 605 minutes resulting in 179,857 CMI.

On September 6, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 275 customers for up to 1,385 minutes resulting in 142,781 CMI.

In total, the HEGINS 58-01 circuit had 64 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (26); equipment failure (20); nothing found (6); animal contacts (5); other (5); vehicles (2).

Remedial Actions

- In 2015, full circuit trimming will be performed.
- A project is in place to reconductor the tie between the HEGINS 58-1 and the HEGINS 58-2 in order to support the transfer of load between both circuits.
- Equipment on the transmission line feeding the HEGINS substation was replaced after an equipment failure caused an outage at the HEGINS substation.
- A project is in place for 2015 to replace a section of copper wire. All currently inaccessible sections of the line will be moved to the road as part of the project.
- Additional fuses were installed at seven locations in 2014 to better protect the line.
- Two fuses will be upgraded to reclosers in 2015.
- A hydraulic recloser on the HEGINS 58-01 line has been upgraded to a remotely operable vacuum recloser.

- A new remotely operable vacuum recloser is planned to be installed on the HEGINS 58-01 to further split the customer count and allow for better sectionalizing in the event of an outage.
- Solid blade disconnected and fault indicators are being investigated for portions of the line. This will help troubleshoot and sectionalize in the event of an outage.

46 Circuit 13601 -- RICHLAND 36-01

Performance Analysis

The RICHLAND 36-01 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On July 3, 2014, during a period of lightning, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 1,164 customers for up to 352 minutes resulting in 294,404 CMI.

On July 4, 2014, during a period of lightning, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 210 customers for up to 933 minutes resulting in 186,337 CMI.

On July 8, 2014, during a period of ice/sleet/snow, an unidentified issue occurred with a substation component causing a circuit breaker to trip to lockout. This outage affected 431 customers for up to 417 minutes resulting in 179,727 CMI.

On July 23, 2014, during a period of heavy rain, a tree made contact with an overhead switch causing a recloser to trip to lockout. This outage affected 600 customers for up to 192 minutes resulting in 114,918 CMI.

In total, the RICHLAND 36-01 circuit had 45 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (20); tree related (14); nothing found (5); animal contacts (4); other (1); vehicles (1).

Remedial Actions

- In August, 2014, several Smart Grid devices were installed on this circuit sectionalizing the line into 500 customer segments.
- In 2015, several new single-phase fuses and disconnects will be installed to isolate trouble areas.

47 Circuit 45502 -- DERRY 55-02

Performance Analysis

The DERRY 55-02 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On July 8, 2014, 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 610 customers for up to 1,487 minutes resulting in 780,541 CMI.

In total, the DERRY 55-02 circuit had 16 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (7); equipment failure (5); animal contacts (1); nothing found (1); other (1); vehicles (1).

Remedial Actions

- In 2015, an existing recloser will be upgraded to a Smart Grid recloser.
- In 2018, a project has been engineered to rebuild 3.1 miles of the three-phase backbone with larger conductor. This will increase the transfer capacity of the DERRY 55-02 to DANVILLE 62-03 tie.

48 Circuit 10602 -- BLOOMING GLEN 06-02

Performance Analysis

The BLOOMING GLEN 06-02 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 353 customers for up to 2,305 minutes resulting in 782,426 CMI.

In total, the BLOOMING GLEN 06-02 circuit had 47 outages between October 2013 and September 2014, with the causes breaking down as follows: animal contacts (15); equipment failure (14); tree related (14); nothing found (2); other (1); vehicles (1).

Remedial Actions

- In April, 2014, several Smart Grid devices were installed on this circuit, sectionalizing the line into 500 customer segments.
- In 2015, several single-phase fuses and disconnects will be installed to isolate trouble areas.
- Animal guarding will be installed in 2015 in areas where animal contacts have been increasing.
- A project to reconfigure several long single-phase taps is currently under review. This project would reduce outage exposure on long single-phase taps.

49 Circuit 60801 -- BUCK 08-01

Performance Analysis

The BUCK 08-01 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a load break fuse to operate. This outage affected 59 customers for up to 1,997 minutes resulting in 117,821 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 455 customers for up to 779 minutes resulting in 354,404 CMI.

On February 5, 2014, 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 274 customers for up to 1,997 minutes resulting in 299,713 CMI.

In total, the BUCK 08-01 circuit had 18 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (8); equipment failure (5); animal contacts (3); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2013, a fuse on a single-phase tap was installed near the substation.
- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In 2014, the benefits of an additional tie for this circuit will be evaluated.

- In 2016, full circuit trimming will be performed.

50 Circuit 63801 -- HEMPFIELD 38-01

Performance Analysis

The HEMPFIELD 38-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a substation component causing a circuit breaker to trip to lockout. This outage affected 1,414 customers for up to 433 minutes resulting in 575,756 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 145 customers for up to 2,496 minutes resulting in 136,169 CMI.

In total, the HEMPFIELD 38-01 circuit had 26 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (12); equipment failure (11); animal contacts (1); other (1); vehicles (1).

Remedial Actions

- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- New and existing sectionalizing and tie devices will be automated in October 2014 as part of the Smart Grid program. This circuit will have full Smart Grid functionality.
- In 2015, a section of three-phase will be reconductored in order to prevent future overloads and improve sectionalizing capability.
- In 2017, full circuit trimming will be performed.

51 Circuit 53101 -- WILLIAMSTOWN 31-01

Performance Analysis

The WILLIAMSTOWN 31-01 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On March 29, 2014, 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 1,955 customers for up to 147 minutes resulting in 133,732 CMI.

On March 31, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,896 customers for up to 77 minutes resulting in 146,087 CMI.

On April 30, 2014, during a period of heavy rain, an equipment failure occurred on an overhead transformer causing a recloser to trip to lockout. This outage affected 1,065 customers for up to 193 minutes resulting in 205,044 CMI.

On June 5, 2014, an equipment failure occurred on an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,948 customers for up to 161 minutes resulting in 313,102 CMI.

In total, the WILLIAMSTOWN 31-01 circuit had 41 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (21); tree related (10); animal contacts (3); nothing found (3); other (3); vehicles (1).

Remedial Actions

- In the third quarter of 2013, additional fusing was installed at three locations in order to reduce customer exposure.
- In the second quarter of, 2014, approximately 30 vintage cutouts prone to failure were replaced.
- Additional sectionalizing devices will be installed or upgraded in 2016. This will allow for the remote troubleshooting of trouble locations and faster restoration times.
- In 2016, approximately 33 Cellon transmission poles have been identified for replacement with steel structures. This work is in response to the March 31, 2014 outage of the ELDRED-PINE GROVE 69 kV line.
- In 2016, approximately 17 motor operated switches are scheduled to be installed on the SUNBURY-DAUPHIN and DAUPHIN-PINE GROVE 69 kV lines. The switches will

allow operators to quickly sectionalize transmission outages to no more than a single distribution substation.

- In 2016, the Williamstown 31-01 circuit is scheduled to be trimmed as part of its vegetation management cycle.

52 Circuit 65503 -- MOUNT JOY 55-03

Performance Analysis

The MOUNT JOY 55-03 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 140 customers for up to 2,158 minutes resulting in 302,016 CMI.

On July 8, 2014, during a period of strong wind, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 533 customers for up to 537 minutes resulting in 285,970 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 260 customers for up to 465 minutes resulting in 120,767 CMI.

In total, the MOUNT JOY 55-03 circuit had 28 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (12); nothing found (5); tree related (5); animal contacts (4); vehicles (2).

Remedial Actions

- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In the first quarter of 2014, a three-phase line section was reconductored to prevent future overloads and increase sectionalizing capabilities.
- In 2014, a three-phase section will be reconductored immediately outside of the substation.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2016, five vacuum recloser switches and one vacuum recloser will be installed as part of its Smart Grid Program.

- In 2016, full circuit trimming will be performed.

53 Circuit 45501 -- DERRY 55-01

Performance Analysis

The DERRY 55-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On November 13, 2013, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,519 customers for up to 164 minutes resulting in 219,462 CMI.

On July 8, 2014, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 537 customers for up to 1,075 minutes resulting in 136,524 CMI.

In total, the DERRY 55-01 circuit had 49 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (20); equipment failure (17); animal contacts (6); vehicles (4); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2015, a new manual disconnect switch will be installed at the head of a radial tap. This switch will help crews sectionalizing this circuit during restoration.
- In 2015, a new Smart Grid recloser will be installed to improve sectionalizing.

54 Circuit 41801 -- GOWEN CITY 18-01

Performance Analysis

The GOWEN CITY 18-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On March 30, 2014, 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 384 customers for up to 2,629 minutes resulting in 589,629 CMI.

In total, the GOWEN CITY 18-01 circuit had 28 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (9); tree related (7); animal contacts (6); other (4); nothing found (2).

Remedial Actions

- The entire GOWEN CITY 18-01 was patrolled and studied under an expanded operational review in 2013. Six work orders were created in response to this review. These work orders were completed throughout 2014, and installed eight new fuse locations, performed maintenance on six pole locations, and replaced a failed sectionalizing device at one location.
- A full circuit tree trim will be completed in 2015.
- In 2015 a recloser will be relocated to better divide the customers between protective devices.
- A project to tie the GOWEN CITY 18-1 to the GRATZ 33-2 is being evaluated. This project would reduce the number of radial customers on the GOWEN CITY 18-1 and improve outage restoration.
- The three-phase backbone GOWEN CITY 18-1 was patrolled in April 2014. Two cracked cross arms were identified and replaced. Additionally new fault indicators were installed.
- A project to install an air break switch directly outside the GOWEN CITY substation is being reviewed. The switch will improve reliability during substation work.

55 Circuit 24602 -- VARDEN 46-02

Performance Analysis

The VARDEN 46-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On July 9, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 186 customers for up to 1,359 minutes resulting in 202,004 CMI.

On July 9, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 495 customers for up to 1,228 minutes resulting in 193,324 CMI.

In total, the VARDEN 46-02 circuit had 49 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (21); animal contacts (11); equipment failure (10); nothing found (4); other (2); vehicles (1).

Remedial Actions

- In the fourth quarter of 2014, full circuit trimming will be completed.
- In 2015, load break disconnects with fault indicators will be installed to add additional sectionalizing points.
- In 2015, a project will be considered to transfer several single-phase customers to another line to reduce outage exposure.

56 Circuit 61304 -- EARL 13-04

Performance Analysis

The EARL 13-04 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 215 customers for up to 965 minutes resulting in 137,975 CMI.

On July 27, 2014, during a period of lightning, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 582 customers for up to 180 minutes resulting in 104,475 CMI.

In total, the EARL 13-04 circuit had 31 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (15); equipment failure (8); animal contacts (3); nothing found (2); vehicles (2); other (1).

Remedial Actions

- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In the fourth quarter of 2014, full circuit trimming will be performed.
- In 2014, a project to install a new tie between the EARL 13-4 and EARL 13-3 circuits will be investigated.

- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

57 Circuit 66001 -- RHEEMS 60-01

Performance Analysis

The RHEEMS 60-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 6, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 675 customers for up to 592 minutes resulting in 399,155 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 529 customers for up to 615 minutes resulting in 324,965 CMI.

In total, the RHEEMS 60-01 circuit had 11 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (5); tree related (5); vehicles (1).

Remedial Actions

- In the fourth quarter of 2014, full circuit trimming will be performed.
- In 2014, a new automated vacuum recloser will be installed as part of the Smart Grid Program.
- In 2014, the replacement of a sectionalizer with an automated vacuum recloser switch will be investigated.

58 Circuit 66703 -- STRASBURG 67-03

Performance Analysis

The STRASBURG 67-03 circuit experienced four outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 167 customers for up to 753 minutes resulting in 125,662 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 53 customers for up to 2,002 minutes resulting in 106,089 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 56 customers for up to 2,178 minutes resulting in 121,927 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 50 customers for up to 3,469 minutes resulting in 173,416 CMI.

In total, the STRASBURG 67-03 circuit had 30 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (14); equipment failure (11); animal contacts (3); nothing found (1); other (1).

Remedial Actions

- In the third quarter of 2014, a new automated vacuum recloser was installed.
- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2014, additional sectionalizing devices will be evaluated for a two-phase tap that experienced three outages.
- In the fourth quarter of 2014, full circuit trimming will be performed.
- In the fourth quarter of 2014, the circuit breaker serving this circuit will be replaced.

59 Circuit 60701 -- BRECKNOCK 07-01

Performance Analysis

The BRECKNOCK 07-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 2,128 customers for up to 2,948 minutes resulting in 735,127 CMI.

In total, the BRECKNOCK 07-01 circuit had 25 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (12); animal contacts (4); vehicles (4); tree related (3); nothing found (2).

Remedial Actions

- Full circuit tree trimming will be completed in the fourth quarter of 2014.
- New and existing sectionalizing and tie devices will be automated in 2014 as part of the Smart Grid program.
- The potential to bring a new line and terminal out of the TERRE HILL substation or the HONEYBROOK substation to decrease the number of customers fed from the BRECKNOCK 07-01 is currently being investigated.

60 Circuit 61801 -- E ELIZABETHTOWN 18-01

Performance Analysis

The E ELIZABETHTOWN 18-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a temporary open point to be interrupted. This outage affected 344 customers for up to 734 minutes resulting in 151,032 CMI.

On February 5, 2014, 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 577 customers for up to 542 minutes resulting in 312,809 CMI.

In total, the E ELIZABETHTOWN 18-01 circuit had 35 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (12); animal contacts (8); equipment failure (7); other (4); nothing found (3); vehicles (1).

Remedial Actions

- In the fourth quarter of 2014, full circuit trimming will be performed.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2017, a new tie line will be built between the RHEEMS 60-01 and ELIZABETHTOWN 18-01 circuits.

61 Circuit 47201 -- FAXON 72-01

Performance Analysis

The FAXON 72-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 26, 2014, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,646 customers for up to 191 minutes resulting in 314,699 CMI.

In total, the FAXON 72-01 circuit had 34 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (16); equipment failure (12); animal contacts (3); nothing found (2); other (1).

Remedial Actions

- Comprehensive trimming was performed in 2014.
- In 2015, an existing switch will be upgraded to a Smart Grid switch and a new Smart Grid recloser will be installed.
- In 2016, single-phase fusing will be installed at six locations.

62 Circuit 45001 -- LIMESTONE 50-01

Performance Analysis

The LIMESTONE 50-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On March 26, 2014, during a period of ice/sleet/snow, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 1,748 customers for up to 688 minutes resulting in 424,096 CMI.

In total, the LIMESTONE 50-01 circuit had 45 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (19); tree related (9); animal contacts (6); other (5); vehicles (5); nothing found (1).

Remedial Actions

- In the first quarter of 2014, the entire LIMESTONE 50-01 circuit was trimmed.
- In March 2014, the normally open switch that ties the LIMESTONE 50-01 to the LAURELTON 10-01 was upgraded to a Smart Grid switch.
- In September 2014, a half mile single-phase was rebuilt to two-phase downstream of the GRAYBILL tap. The project relocated several spans of conductor, replaced several spans of older conductor, and installed two single-phase reclosers to protect the tap that serves 284 customers. The new line was constructed with tree wire where needed.
- In 2015, a new Smart Grid recloser will be installed on the three-phase backbone.
- In 2018, an existing sectionalizing switch on the LIMESTONE 50-01 will be upgraded to a Smart Grid switch.

63 Circuit 63602 -- LETORT 36-02

Performance Analysis

The LETORT 36-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 47 customers for up to 5,271 minutes resulting in 152,811 CMI.

On July 8, 2014, 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 1,633 customers for up to 101 minutes resulting in 164,933 CMI.

In total, the LETORT 36-02 circuit had 47 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (24); equipment failure (12); animal contacts (4); contact or dig in (4); other (2); nothing found (1).

Remedial Actions

- In 2014, a load break disconnect switch and fuse will be added to a section of single-phase line where performance has suffered.
- In 2015, full circuit trimming will be performed.
- In 2015, five new automated devices will be installed as part of the Smart Grid program.

64 Circuit 60301 -- TWIN VALLEY 03-01

Performance Analysis

The TWIN VALLEY 03-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 96 customers for up to 2,285 minutes resulting in 155,073 CMI.

On February 5, 2014, 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 243 customers for up to 4,858 minutes resulting in 336,591 CMI.

In total, the TWIN VALLEY 03-01 circuit had 38 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (19); equipment failure (7); animal contacts (6); nothing found (4); other (2).

Remedial Actions

- In 2014, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2015, a second transmission line source will be built into the TWIN VALLEY substation. This project will improve substation reliability.
- In 2017, full circuit trimming will be performed.

65 Circuit 21601 -- EYNON 16-01

Performance Analysis

The EYNON 16-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On July 3, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 223 customers for up to 1,426 minutes resulting in 307,344 CMI.

In total, the EYNON 16-01 circuit had 45 outages between October 2013 and September 2014,

with the causes breaking down as follows: tree related (18); animal contacts (14); equipment failure (9); other (3); vehicles (1).

Remedial Actions

- In May 2014, a fuse was installed on a single-phase tap to reduce outage exposure for almost two thousand customers.
- In 2016, full circuit trimming will be performed.
- In 2017, a new three-phase tie between the EYNON 16-01 line and the GREENFIELD 71-01 line will be built.

66 Circuit 51601 -- DUKE 16-01

Performance Analysis

The DUKE 16-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,106 customers for up to 2,217 minutes resulting in 605,838 CMI.

In total, the DUKE 16-01 circuit had 21 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (7); equipment failure (6); nothing found (3); animal contacts (2); other (2); vehicles (1).

Remedial Actions

- In the third quarter of 2013, an additional fuse was installed in order to reduce customer outage exposure.
- In 2015, the Duke 16-01 circuit is scheduled to be trimmed as part of its vegetation management cycle.
- In 2015, a one mile tie line will provide approximately 1,200 radial customers with an alternate source for sectionalizing during cases of trouble. The project will also install additional remote operator controlled sectionalizing devices. This tie line would have significantly improved restoration times during the July 8th outage.

67 Circuit 46301 -- ROHRSBURG 63-01

Performance Analysis

The ROHRSBURG 63-01 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On July 2, 2014, during a period of lightning, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,039 customers for up to 194 minutes resulting in 110,566 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 78 customers for up to 3,179 minutes resulting in 191,465 CMI.

On July 8, 2014, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 310 customers for up to 475 minutes resulting in 142,613 CMI.

In total, the ROHRSBURG 63-01 circuit had 38 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (18); animal contacts (9); equipment failure (6); nothing found (3); vehicles (2).

Remedial Actions

- In 2015, an existing recloser will be upgraded to a Smart Grid recloser.
- Several single-phase taps will be evaluated for series fusing.

68 Circuit 13704 -- SCHNECKSVILLE 37-04

Performance Analysis

The SCHNECKSVILLE 37-04 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On April 14, 2014, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,566 customers for up to 681 minutes resulting in 176,415 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead fuse

causing a recloser to trip to lockout. This outage affected 109 customers for up to 1,263 minutes resulting in 117,949 CMI.

On September 6, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,591 customers for up to 690 minutes resulting in 243,610 CMI.

In total, the SCHNECKSVILLE 37-04 circuit had 42 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (18); equipment failure (11); animal contacts (9); other (2); nothing found (1); vehicles (1).

Remedial Actions

- This circuit is currently receiving comprehensive trimming.
- In June, 2014, a new Smart Grid device was installed on this circuit.
- In 2018, a new three-phase tie will be constructed to the SOUTH SLATINGTON 44-03 which will serve over 600 radial customers.

69 Circuit 18502 -- CANADENSIS 85-02

Performance Analysis

The CANADENSIS 85-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On January 5, 2014, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,797 customers for up to 325 minutes resulting in 363,575 CMI.

On May 19, 2014, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 784 customers for up to 170 minutes resulting in 112,404 CMI.

In total, the CANADENSIS 85-02 circuit had 61 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (32); equipment failure (17); animal contacts (7); nothing found (4); other (1).

Remedial Actions

- In November 2014, a new tie line will be built between the between the NORTH STROUDSBURG 56-04, NORTH STROUDSBURG 56-01, and CANADENSIS 85-02 lines. The tie will provide additional sectionalizing capabilities and help reduce future outage durations.
- In 2014, a new tie will be evaluated between the CANADENSIS 85-02 and MOUNT POCONO 64-02 circuits.
- In 2015, a project will be implemented to relocate sections of three-phase to reduce future potential outages due to vegetation, and reduce duration of future outages by increasing accessibility.
- In 2015, a single-phase fuse will be replaced by a single-phase recloser.
- In 2016, full circuit trimming will be performed.

70 Circuit 65401 -- MARIETTA 54-01

Performance Analysis

The MARIETTA 54-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 205 customers for up to 1,978 minutes resulting in 385,748 CMI.

On June 12, 2014, during a period of heavy rain, a vehicle contact caused a circuit breaker to trip to lockout. This outage affected 1,824 customers for up to 139 minutes resulting in 230,050 CMI.

In total, the MARIETTA 54-01 circuit had 18 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (8); equipment failure (3); vehicles (3); other (2); animal contacts (1); nothing found (1).

Remedial Actions

- In 2015, a new automated vacuum recloser will be installed.
- In 2015, a new tie will be built between the MARIETTA 54-01 and the DONEGAL 9-02 circuits
- In 2016, full circuit trimming will be performed.

71 Circuit 64202 -- KINZER 42-02

Performance Analysis

The KINZER 42-02 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 124 customers for up to 948 minutes resulting in 117,509 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a recloser to trip to lockout. This outage affected 84 customers for up to 3,313 minutes resulting in 278,219 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 26 customers for up to 4,587 minutes resulting in 104,047 CMI.

In total, the KINZER 42-02 circuit had 34 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (14); equipment failure (9); animal contacts (5); vehicles (3); nothing found (2); other (1).

Remedial Actions

- In 2013, 115 hazard trees on the circuit were identified and removed.
- In the second quarter of 2014, an additional 80 hazard trees were removed.
- In 2014, animal guarding was installed at the substation.
- In 2014, the 69 kV air break switch at the substation was replaced.
- In 2014, a new substation location is being investigated to split up the customers being fed from this circuit.
- In 2015, a new tie line will be built between the KINZER 42-01 and KINZER 42-02 circuits.
- In 2016, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

72 Circuit 43402 -- BENTON 34-02

Performance Analysis

The BENTON 34-02 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On March 30, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead switch causing a recloser to trip to lockout. This outage affected 457 customers for up to 230 minutes resulting in 105,087 CMI.

On March 30, 2014, 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 143 customers for up to 815 minutes resulting in 116,494 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 147 customers for up to 1,260 minutes resulting in 169,835 CMI.

In total, the BENTON 34-02 circuit had 30 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (13); equipment failure (9); nothing found (4); animal contacts (2); other (2).

Remedial Actions

- In June 2014, a recloser that failed to operate properly was replaced.
- In 2016, an existing recloser will be upgraded to a Smart Grid recloser.

73 Circuit 57702 -- PAXTON 77-02

Performance Analysis

The PAXTON 77-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 918 customers for up to 2,312 minutes resulting in 531,969 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 151 customers for up to 1,110 minutes resulting in 130,932 CMI.

In total, the PAXTON 77-02 circuit had 11 outages between October 2013 and September 2014, with the causes breaking down as follows: animal contacts (4); tree related (4); equipment failure (3).

Remedial Actions

- In 2015, two existing sectionalizing and tie devices will be upgraded with remote communication in 2015. This will allow for quicker sectionalizing and restoration in the event of an outage.
- In 2016, additional sectionalizing devices will be installed and/or upgraded in 2016. This will allow for the remote troubleshooting of trouble locations and faster restoration times.
- In 2016, the PAXTON 77-02 circuit is scheduled to be trimmed as part of its vegetation management cycle.

74 Circuit 62102 -- EAST LANCASTER 21-02

Performance Analysis

The EAST LANCASTER 21-02 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 2,229 customers for up to 305 minutes resulting in 658,796 CMI.

In total, the EAST LANCASTER 21-02 circuit had 23 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (13); tree related (6); animal contacts (3); other (1).

Remedial Actions

- In the first quarter of 2014, animal guards were installed on several sections of line.
- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

- In 2016, eight new automated switches and two automated vacuum reclosers will be installed as part of the Smart Grid program.
- In 2016, full circuit trimming will be performed.

75 Circuit 65804 -- ROHRERSTOWN 58-04

Performance Analysis

The ROHRERSTOWN 58-04 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 877 customers for up to 576 minutes resulting in 505,152 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 125 customers for up to 1,584 minutes resulting in 197,946 CMI.

In total, the ROHRERSTOWN 58-04 circuit had 10 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (5); equipment failure (3); animal contacts (1); nothing found (1).

Remedial Actions

- In 2014, full circuit trimming was performed.
- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In the second quarter of 2014, additional hazard trees were removed.
- In 2015, a manually operable sectionalizing device will be replaced with an automated vacuum recloser switch.
- In 2016, a new automated vacuum recloser will be installed as part of the Smart Grid program.
- In 2016, a manually operable normally open tie switch will be replaced with an automated vacuum recloser switch.

76 Circuit 43201 -- MILLVILLE 32-01

Performance Analysis

The MILLVILLE 32-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On December 29, 2013, during a period of heavy rain, a tree made contact with an overhead conductor causing a temporary open point to be interrupted. This outage affected 152 customers for up to 1,193 minutes resulting in 155,531 CMI.

On July 8, 2014, during a period of lightning, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 86 customers for up to 3,111 minutes resulting in 155,698 CMI.

In total, the MILLVILLE 32-01 circuit had 32 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (14); equipment failure (9); nothing found (5); animal contacts (2); other (2).

Remedial Actions

- In September 2014, an existing recloser on a radial single-phase tap that protects 91 customers was replaced.
- In April 2014, approximately 2,250 feet of new single-phase was built and 2,600 feet of existing single-phase was reconductored. More than 2,500 feet of difficult-to-access line was removed and a new single-phase recloser was installed.
- In 2018, a project will rebuild one mile of inaccessible single-phase along the road.

77 Circuit 24603 -- VARDEN 46-03

Performance Analysis

The VARDEN 46-03 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On November 30, 2013, an unidentified issue occurred with an overhead conductor causing a recloser to trip to lockout. This outage affected 871 customers for up to 551 minutes resulting in 203,734 CMI.

On July 3, 2014, during a period of strong wind, a tree made contact with an overhead conductor

causing a recloser to trip to lockout. This outage affected 197 customers for up to 869 minutes resulting in 171,067 CMI.

In total, the VARDEN 46-03 circuit had 55 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (23); equipment failure (12); nothing found (9); animal contacts (6); other (3); vehicles (2).

Remedial Actions

- In the fourth quarter of 2014, full circuit trimming will be performed.
- In 2014, a recloser will be replaced with a new automated vacuum recloser as part of the Smart Grid Program.
- In 2015, an existing recloser will receive automation.
- In November 2018, a new tie line will be built between the HONESDALE 34-01, EAST CARBONDALE 12-01, and VARDEN 46-03 lines. The tie will provide additional sectionalizing capabilities along with balancing line load to improve tie capabilities.

78 Circuit 64401 -- LANDISVILLE 44-01

Performance Analysis

The LANDISVILLE 44-01 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 893 customers for up to 3,477 minutes resulting in 655,560 CMI.

In total, the LANDISVILLE 44-01 circuit had 10 outages between October 2013 and September 2014, with the causes breaking down as follows: animal contacts (5); equipment failure (2); tree related (2); nothing found (1).

Remedial Actions

- In the first quarter of 2014, an infrared inspection of the line was conducted. Nothing was found during the review.
- In November, 2014, a new air break switch and animal guards will be installed.
- In 2015, full circuit trimming will be performed.
- In 2016, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.

79 Circuit 67804 -- WEST LANCASTER 78-04

Performance Analysis

The WEST LANCASTER 78-04 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,970 customers for up to 173 minutes resulting in 341,066 CMI.

On February 5, 2014, during a period of ice/sleet/snow, at the direction of a non-PPL authority, the circuit was taken out of service. This outage affected 1,940 customers for up to 147 minutes resulting in 284,870 CMI.

In total, the WEST LANCASTER 78-04 circuit had 17 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (8); equipment failure (6); nothing found (2); other (1).

Remedial Actions

- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2017, full circuit trimming will be performed.

80 Circuit 46302 -- ROHRSBURG 63-02

Performance Analysis

The ROHRSBURG 63-02 circuit experienced no outages of over 100,000 CMI between October 2013 and September 2014.

In total, the ROHRSBURG 63-02 circuit had 51 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (26); equipment failure (11); nothing found (9); animal contacts (4); vehicles (1).

Remedial Actions

- This circuit is scheduled for an Expanded Operational Review in 2014.
- In 2015, an existing recloser will be upgraded to a Smart Grid recloser.
- In 2015, a project will relocate approximately one mile of inaccessible three-phase.

81 Circuit 53602 -- DALMATIA 36-02

Performance Analysis

The DALMATIA 36-02 circuit experienced one outage of over 100,000 CMI between October 2013 and September 2014.

On May 27, 2014, during a period of heavy rain, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 845 customers for up to 250 minutes resulting in 162,433 CMI.

In total, the DALMATIA 36-02 circuit had 74 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (37); equipment failure (23); animal contacts (5); nothing found (5); vehicles (4).

Remedial Actions

- In the third quarter of 2013, three-phase voltage regulators were installed on the adjacent PENS 74-01 circuit. The regulators allow for additional customers to be transferred in the event of an outage.
- In September 2013, additional fusing was installed in two locations.
- In the second quarter of 2014, the DALMATIA to DAUPHIN section of the SUNBURY-DAUPHIN 69 kV circuit was trimmed.
- In the third quarter of 2014, the DALMATIA 36-02 circuit was trimmed as part of its vegetation management cycle.
- In 2015, additional radio communication is scheduled to be added to a recloser and normally open air break. This will allow remote operator controlled switching for approximately 200 customers.
- In 2016, approximately 17 motor operated switches are scheduled to be installed on the SUNBURY-DAUPHIN and DAUPHIN-PINE GROVE 69 kV lines. The switches will allow operators to quickly sectionalize transmission outages to no more than a single distribution substation.
- In 2017, a new 69-12 kV substation in the Meiserville area is scheduled for construction. The project will significantly reduce customer counts and circuit miles on the DALMATIA 36-02 circuit as well increase transfer capability in the area. The substation

was originally intended to go into service in November, 2012, but has been delayed by land acquisitions and condemnation proceedings.

82 Circuit 45002 -- LIMESTONE 50-02

Performance Analysis

The LIMESTONE 50-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On November 27, 2013, 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 1,432 customers for up to 105 minutes resulting in 150,059 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 174 customers for up to 1,528 minutes resulting in 229,508 CMI.

In total, the LIMESTONE 50-02 circuit had 45 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (22); equipment failure (9); animal contacts (8); nothing found (2); other (2); vehicles (2).

Remedial Actions

- In January 2014, a manual operated recloser was upgraded to a Smart Grid recloser.
- In April 2014, a manual operated sectionalizing switch was upgraded to a Smart Grid switch.
- A new Smart Grid recloser is currently being installed on this circuit.
- Full circuit trimming will be performed in 2015.
- In 2015, a project will relocate a segment of line to a more accessible location.
- In 2015, a new Smart Grid switch will be added and an existing recloser will be upgraded to a Smart Grid recloser.
- In December 2015, an additional Smart Grid recloser will be installed.
- In 2015, an existing sectionalizing switch will be upgraded to a Smart Grid sectionalizing switch.
- In 2015, two existing sectionalizing switches will be upgraded to Smart Grid sectionalizing switches.

83 Circuit 67503 -- WEST WILLOW 75-03

Performance Analysis

The WEST WILLOW 75-03 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with overhead primary causing a recloser to trip to lockout. This outage affected 46 customers for up to 3,916 minutes resulting in 180,096 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead fuse causing a load break fuse to operate. This outage affected 107 customers for up to 1,443 minutes resulting in 154,379 CMI.

In total, the WEST WILLOW 75-03 circuit had 40 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (17); tree related (16); vehicles (3); nothing found (2); animal contacts (1); other (1).

Remedial Actions

- In 2014, additional fusing downstream will be investigated for a single-phase recloser that operated during the February 5th ice storm.
- In 2014, a load break air break switch will be replaced with an automated vacuum switch.
- In 2014, the opportunity to relocate a section of difficult-to-access single-phase downstream from a recloser that operated during the February 5th ice storm will be investigated.
- In 2015, a new automated vacuum recloser and an automated vacuum recloser tie switch will be installed as part of the Smart Grid program.
- In 2017, full circuit trimming will be performed.

84 Circuit 61001 -- DONERVILLE 10-01

Performance Analysis

The DONERVILLE 10-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,829 customers for up to 213 minutes resulting in 390,382 CMI.

On April 16, 2014, during a period of heavy rain, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 3,453 customers for up to 75 minutes resulting in 260,114 CMI.

In total, the DONERVILLE 10-01 circuit had 11 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (4); tree related (3); vehicles (2); animal contacts (1); nothing found (1).

Remedial Actions

- In 2014, full circuit trimming will be performed.
- In 2015, two new automated vacuum reclosers will be installed as part of the Smart Grid program.

85 Circuit 42001 -- MONTOURSVILLE 20-01

Performance Analysis

The MONTOURSVILLE 20-01 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On June 18, 2014, an equipment failure occurred on an underground conductor causing a circuit breaker to trip to lockout. This outage affected 3,309 customers for up to 99 minutes resulting in 217,806 CMI.

On July 8, 2014, during a period of strong wind, a tree made contact with an overhead conductor causing a recloser to trip to lockout. This outage affected 197 customers for up to 993 minutes resulting in 195,532 CMI.

In total, the MONTOURSVILLE 20-01 circuit had 30 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (8); animal contacts (7); equipment failure (7); vehicles (4); other (3); nothing found (1).

Remedial Actions

- In July 2014, the underground getaway was replaced.
- In 2015 single-phase fusing will be installed at 16 locations, and disconnect switches at two locations.
- In 2016, an existing switch will be upgraded to a Smart Grid switch and a new Smart Grid switch will be installed.

86 Circuit 61504 -- EAST PETERSBURG 15-04

Performance Analysis

The EAST PETERSBURG 15-04 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 30 customers for up to 3,497 minutes resulting in 104,907 CMI.

On February 5, 2014, during a period of ice/sleet/snow, a tree made contact with an overhead conductor causing a load break fuse to operate. This outage affected 74 customers for up to 2,044 minutes resulting in 151,203 CMI.

In total, the EAST PETERSBURG 15-04 circuit had 21 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (9); equipment failure (8); animal contacts (1); contact or dig in (1); nothing found (1); other (1).

Remedial Actions

- In 2015, full circuit trimming will be performed.
- In 2015, a new automated vacuum recloser and an automated tie switch will be installed as part of the Smart Grid program.

87 Circuit 11102 -- EGYPT 11-02

Performance Analysis

The EGYPT 11-02 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On January 4, 2014, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,964 customers for up to 363 minutes resulting in 357,738 CMI.

On May 2, 2014, a vehicle made contact with a pole causing a circuit breaker to trip to lockout. This outage affected 2,351 customers for up to 829 minutes resulting in 128,498 CMI.

On June 9, 2014, 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 1,970 customers for up to 59 minutes resulting in 115,422 CMI.

In total, the EGYPT 11-02 circuit had 16 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (9); vehicles (3); animal contacts (2); nothing found (1); tree related (1).

Remedial Actions

- In May, 2015, two new Smart Grid devices will be installed, sectionalizing the line into 500 customer segments.
- In 2016, several new single-phase fuses will be installed.
- A project to extend three-phase and balance loading on the circuit is currently under investigation.

88 Circuit 64903 -- MILLERSVILLE 49-03

Performance Analysis

The MILLERSVILLE 49-03 circuit experienced three outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, 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 69 customers for up to 3,490 minutes resulting in 237,002 CMI.

On February 5, 2014, 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 135 customers for up to 1,204 minutes resulting in 104,834 CMI.

On July 8, 2014, during a period of strong wind, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 137 customers for up to 1,361 minutes resulting in 184,480 CMI.

In total, the MILLERSVILLE 49-03 circuit had 17 outages between October 2013 and September 2014, with the causes breaking down as follows: tree related (8); equipment failure (7); animal contacts (1); contact or dig in (1).

Remedial Actions

- In 2016, full circuit trimming will be performed.
- In 2016, a new automated vacuum recloser will be installed as part of the Smart Grid program.

89 Circuit 61502 -- EAST PETERSBURG 15-02

Performance Analysis

The EAST PETERSBURG 15-02 circuit experienced two outages of over 100,000 CMI between October 2013 and September 2014.

On February 5, 2014, during a period of ice/sleet/snow, an unidentified issue occurred causing a circuit breaker to trip to lockout. This outage affected 1,012 customers for up to 289 minutes resulting in 292,458 CMI.

On July 8, 2014, during a period of heavy rain, a tree made contact with an overhead switch causing a circuit breaker to trip to lockout. This outage affected 1,017 customers for up to 131 minutes resulting in 132,576 CMI.

In total, the EAST PETERSBURG 15-02 circuit had 19 outages between October 2013 and September 2014, with the causes breaking down as follows: equipment failure (9); tree related (5); animal contacts (3); nothing found (1); vehicles (1).

Remedial Actions

- In 2016, full circuit trimming will be performed.
- In 2016, a new automated switch and one automated vacuum recloser will be installed as part of the Smart Grid program.

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. The top three causes (Equipment Failures, Tree Related, and Animals), which are based on the percent of cases of trouble, are highlighted in the table. PPL Electric’s maintenance programs focus on corrective actions to address controllable service interruptions (e.g., trees and equipment failure).

Cause Description	Trouble Cases ⁷	Percent of Trouble Cases	Customer Interruptions ⁸	Percent of Customer Interruptions	Customer Minutes	Percent of Customer Minutes
Animals	3,482	19.9%	57,039	4.3%	3,919,715	1.7%
Contact / Dig-In	129	0.7%	15,823	1.2%	1,176,599	0.5%
Directed by Non-PPL Authority	201	1.2%	11,206	0.9%	1,060,489	0.5%
Equipment Failures	5,636	32.3%	456,406	34.7%	51,104,389	22.3%
Improper Design	10	0.1%	12,829	1.0%	283,464	0.1%
Improper Installation	11	0.1%	8,021	0.6%	585,000	0.3%
Improper Operation	6	0.0%	8,584	0.7%	787,250	0.3%
Nothing Found	1,211	6.9%	83,550	6.4%	7,923,470	3.5%
Other Controllable	122	0.7%	39,019	3.0%	1,539,609	0.7%
Other Non Control	275	1.6%	44,182	3.4%	3,132,673	1.4%
Other Public	43	0.2%	8,281	0.6%	516,009	0.2%
Tree Related	5,662	32.4%	422,679	32.1%	141,800,733	61.9%
Vehicles	683	3.9%	147,773	11.2%	15,347,009	6.7%
Total	17,471	100.0%	1,315,392	100.0%	229,176,409	100.0%

⁷ Cases of trouble are the number of sustained customer service interruptions (i.e., service outages).

⁸ 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.

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.

Tree Related: Although their effect on reliability is significant, tree outages not related to trimming generally are caused by trees falling from outside of PPL Electric's rights-of-way. PPL Electric has recently increased funding to more aggressively address out of right-of-way danger trees. For trees within the right-of-way, PPL Electric has implemented a more aggressive trimming strategy.

Animals: Animals accounted for about 20% 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 79% 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 41% of the cases of trouble, 43% of the customer interruptions and 53% of the customer minutes attributed to equipment failure were weather-related and, as such, are not considered to be indicators of equipment condition or performance.

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

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

Inspection & Maintenance Goals/Objectives	Annual Budget	3rd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of poles)	455	100	104	325	325
Transmission arm replacements (# of sets)	0	0	0	0	0
Transmission air break switch inspections (# of switches)	29	6	3	21	13
Transmission lightning arrester installations (# of sets)	497	0	47	497	340
Transmission structure inspections (# of structures)	1,143	174	45	1,050	747
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	416	84	81	416	416
Transmission reclearing (# of miles) 69 kV	1,070	355	231	782	767
Transmission reclearing (# of miles) 138 kV	12.16	0	0.25	12.16	12.16
Transmission danger tree removals-Bulk Power (# of trees)	N/A	N/A	5,075	N/A	24,420
Substation					
Substation batteries (# of activities)	652	124	75	607	608
Circuit breakers (# of activities)	675	133	204	649	573
Substation inspections (# of activities)	4,539	1,061	1,078	3,451	3,481
Transformer maintenance (# of activities)	1,430	339	112	1,092	790
Distribution					
Distribution C-tag poles replaced (# of poles)	1,416	161	188	884	1,051
C-truss distribution poles (# of poles)	5,367	1,389	1,450	4,224	3,978
Capacitor (MVAR added)	29	0	5	25	30
OCR replacements (# of) ⁹	157	17	17	134	123
Distribution pole inspections (# of poles)	90,000	26,040	26,332	59,518	59,857
Distribution line inspections (hours)	5,224	1,159	1,615	3,274	3,351
Group re-lamping (# of lamps)	14,101	5,384	6,175	14,101	14,404
Test sections of underground distribution cable	342	42	42	298	298
Distribution tree trimming (# of miles)	6,063	1,559	1,383	4,650	4,557
Distribution herbicide (# of acres)	N/A				

⁹ On 12/3/2013 PPL Electric notified the PUC of its plan to replace all three-phase oil circuit reclosers with vacuum devices over a 10 year cycle.

Inspection & Maintenance Goals/Objectives	Annual Budget	3rd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution >18" removals within R/W (# of trees)	N/A				
Distribution hazard tree removals outside R/W (# of trees)	N/A	N/A	1,238	N/A	11,694
LTN manhole inspections (# of)	373	16	34	312	332
LTN vault inspections (# of)	724	207	215	589	609
LTN network protector overhauls (# of)	79	4	13	75	68
LTN reverse power trip testing (# of) ¹⁰	136	35	16	105	61

¹⁰ A best practice benchmarking review found that we PPL Electric was performing more testing than was effective. Future testing will be performed in accordance with industry best practices.

- 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. (For first, second and third quarter reports only.)*

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

Activity	3rd Quarter		Year-to-date	
	Budget (\$1,000s)	Actual (\$1,000s)	Budget (\$1,000s)	Actual (\$1,000s)
Provide Electric Service	2,350	2,360	6,915	5,984
Vegetation Management	12,392	14,044	33,475	40,326
Customer Response	18,658	20,314	48,561	61,214
Reliability & Maintenance	12,689	13,469	41,180	42,750
System Upgrade	116	378	399	656
Customer Services/Accounts	36,566	36,972	93,257	92,079
Others	9,778	9,415	30,587	29,636
Total O&M Expenses	92,549	96,952	254,374	272,645

- 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. (For first, second and third quarter reports only.)*

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

	3rd Quarter		Year-to-date	
	Budget (\$1,000s)	Actual (\$1,000s)	Budget (\$1,000s)	Actual (\$1,000s)
New Service/Revenue	17,477	23,109	54,914	60,668
System Upgrade	127,551	132,257	412,998	428,384
Reliability & Maintenance	71,856	75,583	220,704	196,552
Customer Response	3,713	5,463	8,551	13,056
Other	4,837	4,178	17,695	15,143
Total	225,434	240,590	714,862	713,802

- 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	69
Journeyman Lineman	215
Journeyman Lineman-Trainee	60
Helper	28
Groundhand	3
Troubleman	46
T&D Total	421
Electrical	
Elect Leaders-UG	9
Elect Leaders-Net	9
Elect Leaders-Sub	22
Journeyman Elect-UG	25
Journeyman Elect-Net	18
Journeyman Elect-Sub	50
Journeyman Elect Trainee-UG	2
Journeyman Elect Trainee-Net	17
Journeyman Elect Trainee	23
Helper	0
Laborer-Network	0
Laborer-Substation	0
Electrical Total	175
Overall Total	596

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	<ul style="list-style-type: none">• Performs manual labor and assists employees in higher job classifications.
Helper	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Works by himself 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	<ul style="list-style-type: none">• Works by himself 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Investigates and resolves trouble calls, voltage abnormalities on transmission and distribution systems associated with, but not limited to, PPL Electric facilities.

Electrical

<p>Electrician Leader</p> <ul style="list-style-type: none">- Substation- Network- Underground	<ul style="list-style-type: none">• 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.
<p>Helper</p> <ul style="list-style-type: none">- Substation- Network- Underground	<ul style="list-style-type: none">• 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.
<p>Laborer</p> <ul style="list-style-type: none">- Substation- Network- Underground	<ul style="list-style-type: none">• Performs manual labor and assists employees in higher job classifications.
<p>Journeyman Electrician</p> <ul style="list-style-type: none">- Substation- Network- Underground	<ul style="list-style-type: none">• 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

<p>Journeyman Electrician - Trainee</p> <ul style="list-style-type: none">- Substation- Network- Underground	<ul style="list-style-type: none">• 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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