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E-FILE

July 31, 2020

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

**Re: PPL Electric Utilities Corporation
Quarterly Reliability Report for the
Period Ended June 30, 2020
Docket No. M-2016-2522508**

Dear Ms. Chiavetta:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric") is the **NON-CONFIDENTIAL** version of PPL Electric's Quarterly Reliability Report for the Period Ended June 30, 2020 ("Quarterly Reliability Report"). 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 July 31, 2020, which is the date it was filed electronically with the Commission's E-Filing System.

PPL Electric has also electronically submitted a proprietary and confidential version of this filing pursuant to the Pennsylvania Public Utility Commission's instructions in the *Emergency Order re Suspension of Regulatory and Statutory Deadlines; Modification to Filing and Service Requirements* at Docket No. M-2020-3019262 (Order entered March 20, 2020).

Rosemary Chiavetta

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July 31, 2020

If you have any questions regarding this document, please call me or Nikki Jones, PPL Electric's Director, State Government Relations at (717) 603-4029.

Very truly yours,

A handwritten signature in blue ink that reads "Kimberly A. Klock". The signature is fluid and cursive, with the first name "Kimberly" and last name "Klock" being the most prominent parts.

Kimberly A. Klock

Enclosures

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



PPL Electric Utilities Corporation
Quarterly Reliability Report
to the
Pennsylvania Public Utility Commission

July 2020

- 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.***

No major events occurred during the second quarter of 2020.

- 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 June 30, 2020.

SAIFI	BM 0.98	0.82
	STD 1.18	0.82
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	BM 145	136
	STD 174	136
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	BM 142	111
	STD 205	111
MAIFI		5.2
Average Number of Customers Served ¹		1,433,105
Number of Sustained Customer Interruptions (Trouble Cases)		20,995
Number of Customers Affected ²		1,176,112
Customer Minutes of Interruptions (CMI)		159,471,575
Number of Customer Momentary Interruptions		7,449,160

During the second quarter, there were no (0) PUC major events, three (3) PUC reportable events, and five (5) other storms that required the opening of one or more area emergency centers to manage restoration efforts.

¹ PPL Electric calculates the annual indices using customers served at the end of period. This is consistent with the method used to calculate PPL Electric's benchmarks.

² 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.

PPL Electric's second quarter reliability performance was within the PUC standard and benchmark for all metrics.

Because weather has a significant impact to volatility in reliability metrics, PPL Electric's IEEE Metrics are shown below. The IEEE 1366 standard is a widely used methodology that allows for weather normalized performance evaluation that better reflects system performance during non-major storm events. PPL Electric is consistently a first quartile SAIFI performer, a first quartile SAIDI performer, and a second quartile CAIDI performer. The table below lists PPL Electric's IEEE performance metrics compared to the performance quartiles for large utilities nationally, as issued by the IEEE annual reliability survey. This survey comprises some 100 utilities serving 85 million customers across the country. PPL Electric's continued focus on improving system reliability and response is directly related to its strong SAIFI performance.

	IEEE CAIDI	IEEE SAIFI	IEEE SAIDI
2017	116	0.60	70.0
2018	112	0.74	82.5
2019	113	0.66	74.3
Rolling 4Q ending 2020 Q2	102	0.71	72.1
IEEE First Quartile Ceiling	100	0.80	85
IEEE Second Quartile Ceiling	114	1.00	112

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.

Note: PPL Electric changed its methodology for identifying worst performing circuits beginning Q1 of 2020. See Appendix for an explanation of the methodology and a comparison of the worst performing circuits under the previous and current methods.

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

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
1	55001	1239	180	6.87	31.4	1,296	275	1,606,116
2	20103	659	1539	0.43	2.3	1,732	8	1,141,844
3	28101	415	124	3.33	30.8	1,681	74	697,327
4	21206	360	177	2.03	15.0	2,466	34	887,551
5	18501	442	219	2.02	16.8	1,447	54	638,946
6	11504	397	179	2.22	3.4	1,326	12	526,626
7	45002	904	458	1.97	6.9	1,948	60	1,760,934
8	56802	321	100	3.22	13.4	1,537	74	494,089
9	56501	335	114	2.95	12.3	2,413	45	809,124
10	56504	287	114	2.51	22.0	1,975	116	566,697
11	52401	388	101	3.84	11.8	1,279	67	496,885
12	18502	547	356	1.54	16.3	1,842	92	1,008,020
13	24901	271	90	3.01	17.1	2,275	56	615,558
14	25801	286	124	2.32	7.1	1,820	57	521,249
15	52402	308	108	2.85	8.3	1,666	87	513,242
16	20601	390	146	2.67	24.9	1,467	41	572,168
17	11506	315	79	3.99	9.8	1,310	54	412,224
18	53601	336	76	4.42	8.7	1,110	51	373,274
19	59002	241	106	2.26	11.6	2,243	79	540,375
20	45902	361	265	1.36	16.7	1,335	54	481,867
21	40201	356	187	1.90	10.9	1,671	121	595,371
22	13704	226	79	2.86	19.2	1,571	34	354,632
23	40602	231	103	2.24	4.7	2,316	87	535,907
24	11303	261	283	0.92	10.1	1,632	35	426,524

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
25	22905	194	68	2.84	10.3	2,837	15	550,546
26	14501	218	64	3.42	11.7	1,132	22	246,928
27	22401	276	68	4.07	15.9	868	26	239,672
28	24401	261	82	3.17	19.8	1,253	71	327,060
29	20402	446	261	1.71	8.7	1,902	55	847,731
30	63404	241	97	2.47	22.1	1,056	23	254,197
31	17801	272	301	0.90	21.8	730	34	198,555
32	28602	312	244	1.28	4.8	1,931	32	602,526
33	63201	179	56	3.21	4.1	1,094	31	195,491
34	41602	490	112	4.36	11.5	836	68	409,262
35	28402	193	94	2.04	6.0	1,610	39	310,329
36	24902	195	87	2.25	9.4	1,420	50	277,568
37	46001	199	229	0.87	4.7	2,349	66	466,697
38	55002	648	167	3.87	7.6	746	65	483,041
39	27403	208	2333	0.09	3.9	2,417	7	501,693
40	28102	457	192	2.38	6.4	1,095	77	500,877
41	59202	211	85	2.50	15.4	1,715	89	362,359
42	50503	160	97	1.65	10.0	2,077	12	331,450
43	13606	183	185	0.99	6.6	1,595	32	292,292
44	40603	268	135	1.99	8.9	1,480	57	397,126
45	12802	165	31	5.32	1.0	735	12	121,133
46	45302	424	326	1.30	9.0	1,211	52	513,710
47	26601	232	268	0.86	5.0	1,326	37	307,058
48	26602	624	169	3.69	6.3	689	18	429,781
49	14801	204	644	0.32	16.9	1,907	42	388,513
50	57403	164	49	3.35	31.1	1,476	35	241,512
51	21901	136	43	3.17	13.2	2,559	72	347,490
52	24602	192	66	2.93	10.2	1,505	83	289,514
53	25501	178	61	2.90	14.3	1,668	72	296,797
54	43304	204	106	1.93	10.2	1,637	44	333,385
55	11402	186	166	1.12	7.3	2,484	24	461,097
56	52403	204	42	4.87	6.9	1,254	78	256,050
57	12202	259	156	1.65	5.3	1,292	26	334,058
58	64801	214	174	1.23	11.3	1,517	52	324,789
59	27501	299	238	1.26	5.2	1,250	30	374,219
60	29702	467	121	3.87	11.9	833	67	389,258
61	41902	273	273	1.00	20.1	1,370	60	374,644
62	45702	147	72	2.05	18.4	1,745	73	255,697
63	65901	191	2573	0.07	5.4	1,524	11	290,801

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

01 Circuit 55001 -- NEWPORT 50-01

Performance Analysis

The NEWPORT 50-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On June 4, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 394 customers for up to 1,706 minutes resulting in 666,941 CMI.

In total, the NEWPORT 50-01 circuit had 217 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (112); tree related (51); Scheduled Outage (21); equipment failure (20); animal contacts (9); other (2); nothing found (1); vehicles (1).

Remedial Actions

- In 2019, a new Smart Grid device was installed.
- In 2019, a battery demonstration energy storage system was installed to study reliability benefits and voltage control. Since that time, it has operated once, saving 2,724 customer minutes.
- In 2019, three single-phase reclosers were installed, along with related fusing.
- In 2019, a substation conversion was performed.
- In 2019, additional single-phase sectionalizing was installed.
- In 2019, a drone and infrared inspection was performed. Several minor remediations will be performed in 2020 as a result.
- In 2020, two single-phase sectionalizing trip saver devices were installed; one additional trip saver will be installed in 2020.
- In 2020, full circuit trimming was completed. Next circuit trimming will be in 2025.
- In 2020, a section of single-phase will be resourced.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2022, a section of three-phase will be relocated.
- In 2022, a section of single-phase will be reconductored.

02 Circuit 20103 -- AVOCA 01-03

Performance Analysis

The AVOCA 01-03 circuit experienced three outages of over 100,000 CMI between July 2019 and June 2020.

On August 2, 2019, a vehicle contact occurred causing a circuit breaker to trip to lockout. This outage affected 1,886 customers for up to 400 minutes resulting in 289,301 CMI.

On July 30, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,889 customers for up to 311 minutes resulting in 529,854 CMI.

On July 6, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,736 customers for up to 197 minutes resulting in 226,617 CMI.

In total, the AVOCA 01-03 circuit had 19 outages between July 2019 and June 2020, with the causes breaking down as follows: equipment failure (5); Scheduled Outage (5); animal contacts (3); tree related (3); Unknown (2); vehicles (1).

Remedial Actions

- In 2020, additional fusing will be installed at four locations.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, additional animal guarding will be installed.
- In 2021, a tie to the AVOCA 01-06 will be constructed.

03 Circuit 28101 -- TWIN LAKES 81-01

Performance Analysis

The TWIN LAKES 81-01 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On December 17, 2019, during a period of strong wind, a tree contact caused a circuit breaker to trip to lockout. This outage affected 1,671 customers for up to 319 minutes resulting in 214,345 CMI.

On December 9, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,024 customers for up to 254 minutes resulting in 129,697 CMI.

In total, the TWIN LAKES 81-01 circuit had 96 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (33); tree related (28); equipment failure (13); animal contacts (9); Scheduled Outage (6); nothing found (4); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In 2019, three-phase regulators were installed.
- In 2020, fusing was installed at multiple locations.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, two new three-phase ties will be constructed.
- In 2020, multiple transformers will be replaced.
- In 2020, animal guarding will be installed at multiple locations.
- In 2020, several poles will be replaced.
- In 2020, several reclosers will be replaced.
- In 2020, additional fusing will be evaluated at several locations.
- In 2020, additional single-phase reclosers will be installed on this circuit.

04 Circuit 21206 -- EAST CARBONDALE 12-06

Performance Analysis

The EAST CARBONDALE 12-06 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On February 2, 2020, the circuit was taken out of service at the direction of a non-PPL authority. This outage affected 2,244 customers for up to 153 minutes resulting in 158,242 CMI.

On July 30, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 3,052 customers for up to 275 minutes resulting in 591,341 CMI.

In total, the EAST CARBONDALE 12-06 circuit had 57 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (20); Scheduled Outage (12); tree related (11); equipment failure (8); animal contacts (5); other (1).

Remedial Actions

- In 2019, the protection settings for this circuit were reviewed. Several minor remediations were performed.
- In 2019, dissimilar metal connections were remediated at two locations.
- In 2020, two Smart Grid devices were replaced.
- In 2020, dissimilar metal connections were remediated at three locations.
- In 2020, full circuit trimming will be performed.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, additional single-phase reclosers will be evaluated.
- In 2020, a section of this circuit will be reconducted.
- In 2021, a section of this circuit will be re-sourced, and additional sectionalizing will be installed.

05 Circuit 18501 -- CANADENSIS 85-01

Performance Analysis

The CANADENSIS 85-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 21, 2019, during a period of strong wind, a tree contacted an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,428 customers for up to 532 minutes resulting in 336,533 CMI.

In total, the CANADENSIS 85-01 circuit had 89 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (30); Unknown (30); equipment failure (12); animal contacts (8); Scheduled Outage (5); nothing found (4).

Remedial Actions

- In 2019, several transmission poles and conductors were replaced.
- In 2019, hot spot trimming was performed.
- In 2019, an existing recloser was replaced.
- In 2019, multiple capacitors were upgraded to telemetric capability.
- In 2020, animal guarding was installed at multiple locations.
- In 2020, several dissimilar metal connections will be remediated.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, additional lightning arrestors will be installed.
- In 2020, several poles will be replaced.
- In 2020, full circuit trimming will be performed.
- In 2020, hot spot trimming will be performed.
- In 2020, an additional single-phase recloser will be installed.

06 Circuit 11504 -- FREEMANSBURG 15-04

Performance Analysis

The FREEMANSBURG 15-04 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 20, 2019, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 2,475 customers for up to 316 minutes resulting in 414,095 CMI.

In total, the FREEMANSBURG 15-04 circuit had 22 outages between July 2019 and June 2020, with the causes breaking down as follows: equipment failure (8); Scheduled Outage (8); tree related (3); Unknown (2); vehicles (1).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2019, ten locations were animal guarded.
- In 2020, several dissimilar metal connections were remediated.
- In 2020, additional animal guarding will be installed at 14 locations.
- In 2021, a portion of this circuit will be transferred, reducing load and circuit length.

07 Circuit 45002 -- LIMESTONE 50-02

Performance Analysis

The LIMESTONE 50-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On December 1, 2019, during a period of heavy rain, a tree contacted an overhead conductor causing an interruption. This outage affected 1,366 customers for up to 817 minutes resulting in 1,001,158 CMI.

On October 27, 2019, during a period of heavy rain, a tree contacted an overhead conductor causing an interruption. This outage affected 1,365 customers for up to 560 minutes resulting in 634,142 CMI.

In total, the LIMESTONE 50-02 circuit had 96 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (42); tree related (27); equipment failure (13); Unknown (6); animal contacts (5); nothing found (2); contact or dig in (1).

Remedial Actions

- In 2019, a section of difficult-to-access conductor was relocated.
- In 2019, additional fusing was installed.
- In 2019, a new Smart Grid device was installed.
- In 2019 and 2020, ten poles will be replaced.
- In 2019, a Proactive Circuit Analysis was performed. As a result, a single-phase recloser will be installed in 2020.
- In 2020, additional fusing will be installed.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, a section of difficult-to-access single-phase will be relocated.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, aerial cable will be installed in a heavily wooded section of this circuit.
- In 2020, a new substation will be evaluated.
- In 2021, full circuit trimming will be performed.

08 Circuit 56802 -- BENVENUE 68-02

Performance Analysis

The BENVENUE 68-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the BENVENUE 68-02 circuit had 96 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (40); Unknown (22); Scheduled Outage (14); equipment failure (10); nothing found (5); animal contacts (3); contact or dig in (2).

Remedial Actions

- In 2019, four additional single-phase sectionalizing devices were installed.
- In 2019, the protection settings on this circuit were optimized.
- In 2019, a Proactive Circuit Analysis was performed. As a result, six single-phase fusing locations were identified.
- In 2020, five sectionalizing devices were installed, additional two more devices will be installed in 2020.
- In 2020, a section of single-phase line resourcing completed.
- In 2020, seven additional single-phase recloser will be installed.
- In 2021, full circuit trimming will be done.
- In 2022, a section of 1ph will be relocated and reconfigured to reduce exposure.

09 Circuit 56501 -- ROCKVILLE 65-01

Performance Analysis

The ROCKVILLE 65-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On October 17, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,218 customers for up to 478 minutes resulting in 553,479 CMI.

In total, the ROCKVILLE 65-01 circuit had 80 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (32); tree related (25); equipment failure (9); animal contacts (7); Scheduled Outage (6); nothing found (1).

Remedial Actions

- In 2019, full circuit tree trimming was performed.
- In 2019, voltage support devices were installed.
- In 2019, an existing recloser was upgraded to a Smart Grid device.
- In 2020, 14 locations received animal guards and 4 more are to be completed in 2020.
- In 2020, eight new fuses were installed with one more scheduled.
- In 2020, a section of line will be re-sourced.
- In 2020, an additional Smart Grid device will be installed.
- In 2020, an additional tie line will be installed.
- In 2020, three new Smart Grid devices were evaluated and will be installed in 2022.
- In 2020, a new substation will be evaluated and three-phase reconductoring will be evaluated as part of substation evaluation.

10 Circuit 56504 -- ROCKVILLE 65-04

Performance Analysis

The ROCKVILLE 65-04 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 6, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,993 customers for up to 423 minutes resulting in 193,977 CMI.

In total, the ROCKVILLE 65-04 circuit had 119 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (45); Unknown (35); animal contacts (14); equipment failure (12); Scheduled Outage (8); nothing found (4); contact or dig in (1).

Remedial Actions

- In 2019, multiple single-phase sectionalizing devices were installed.
- In 2020, seven fuses were installed and one more scheduled.
- In 2020, 150 hazard trees were removed.
- In 2020, six single-phase sectionalizing devices will be installed.
- In 2020, additional animal guards will be installed.
- In 2022, a section of single-phase will be relocated underground.

11 Circuit 52401 -- GREEN PARK 24-01

Performance Analysis

The GREEN PARK 24-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the GREEN PARK 24-01 circuit had 86 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (30); Scheduled Outage (18); Unknown (15); equipment failure (11); animal contacts (6); nothing found (4); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2019, two fuses were installed.
- In 2019, two single-phase reclosers were installed.
- In 2020, three single-phase reclosers will be installed.
- In 2022, three sections of single-phase will be relocated.
- In 2022, a section of single-phase will be reconducted.
- In 2022, additional sectionalizing devices will be installed.
- In 2022, an additional Smart Grid device will be installed.

12 Circuit 18502 -- CANADENSIS 85-02

Performance Analysis

The CANADENSIS 85-02 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 21, 2019, during a period of strong wind, a tree contacted an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 1,841 customers for up to 672 minutes resulting in 726,808 CMI.

In total, the CANADENSIS 85-02 circuit had 128 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (57); Unknown (32); Scheduled Outage (18); animal contacts (9); equipment failure (6); nothing found (3); vehicles (3).

Remedial Actions

- In 2019, several transmission poles and conductors were replaced.
- In 2019, a new Smart Grid device was installed.
- In 2019, a new single-phase recloser was installed, and another was replaced.
- In 2019, three sections of conductor were relocated.
- In 2019, several locations were reconductored.
- In 2020, additional animal guarding was installed.
- In 2020, a section of single-phase line will be relocated.
- In 2020, hot spot trimming will be performed at the highest priority grids.
- In 2020, multiple locations will be reconductored or receive Hendrix tree cable.
- In 2020, a three-phase recloser will be installed and another will be replaced.
- In 2020, two single-phase reclosers will be installed.
- In 2020, multiple poles will be replaced.
- In 2020, additional voltage regulators will be installed.
- In 2021, full circuit trimming will be performed.
- In 2021, a section of three-phase conductor will be extended.

13 Circuit 24901 -- WHITE HAVEN 49-01

Performance Analysis

The WHITE HAVEN 49-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On October 4, 2019, during a period of heavy rain, a tree contacted an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 583 customers for up to 296 minutes resulting in 163,339 CMI.

In total, the WHITE HAVEN 49-01 circuit had 94 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (23); Unknown (23); Scheduled Outage (21); equipment failure (14); animal contacts (7); nothing found (2); vehicles (2); contact or dig in (1); other (1).

Remedial Actions

- In 2019, the getaway for this circuit was replaced.
- In 2019, a single-phase recloser was installed.
- In 2020, full circuit trimming was performed.
- In 2020, two three-phase extensions were constructed to split up single-phase customers. These projects included additional fusing and single-phase reclosers.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2020, additional hot spot trimming will be evaluated.
- In 2020, five new reclosers will be evaluated.
- In 2020, a section of single-phase will be evaluated for reconductoring.
- In 2022, a new Smart Grid device will be installed.

14 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 21, 2019, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 248 customers for up to 568 minutes resulting in 140,392 CMI.

In total, the SULLIVAN TRAIL 58-01 circuit had 60 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (23); equipment failure (11); Unknown (10); animal contacts (8); Scheduled Outage (4); nothing found (2); vehicles (2).

Remedial Actions

- In 2020, a section of conductor will be evaluated for undergrounding.
- In 2020, additional fusing will be evaluated.
- In 2021, three additional single-phase reclosers will be installed on this circuit.
- In 2021, a section of three-phase will be reconductored.
- In 2021, a section of three-phase conductor will be extended.
- In 2021, full circuit trimming will be performed.

15 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the GREEN PARK 24-02 circuit had 89 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (38); Unknown (14); equipment failure (12); Scheduled Outage (11); animal contacts (7); contact or dig in (3); other (3); nothing found (1).

Remedial Actions

- In 2019, a single-phase sectionalizing device was installed.
- In 2019, additional animal guarding was installed.
- In 2019, a section of difficult-to-access single-phase was relocated.
- In 2019, 80 additional fuses were installed.
- In 2020, four sections of conductor were relocated, with one more to be relocated in 2020.
- In 2020, a second transmission source to the distribution substation was constructed.
- In 2020, one single-phase sectionalizing was installed and one more is scheduled.
- In 2020, one section of difficult-to-access conductor was relocated, and one will be reconducted to 2021
- In 2020, six single-phase sectionalizing devices were installed.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2021, one section of single-phase will be relocated to underground.
- In 2021, one section of single-phase will be reconducted.
- In 2022, an additional section of single-phase will be reconducted.
- In 2022, a section of single-phase will be re-sourced to reduce exposure.

16 Circuit 20601 -- GREENWOOD 06-01

Performance Analysis

The GREENWOOD 06-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On January 12, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,554 customers for up to 183 minutes resulting in 403,740 CMI.

In total, the GREENWOOD 06-01 circuit had 84 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (29); tree related (23); Scheduled Outage (13); equipment failure (10); animal contacts (8); contact or dig in (1).

Remedial Actions

- In 2020, seven additional fuses were installed.
- In 2020, an adjacent circuit was reconductored to improve transfer capability.
- In 2020, two additional single-phase reclosers were installed.
- In 2020, an existing recloser was replaced with a Smart Grid device.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, additional fusing will be installed at six locations.

17 Circuit 11506 -- FREEMANSBURG 15-06

Performance Analysis

The FREEMANSBURG 15-06 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On January 27, 2020, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 1,319 customers for up to 185 minutes resulting in 181,648 CMI.

In total, the FREEMANSBURG 15-06 circuit had 73 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (24); tree related (18); Unknown (13); equipment failure (8); animal contacts (6); nothing found (2); vehicles (2).

Remedial Actions

- In 2020, a section of three-phase conductor was extended.
- In 2020, a Smart Grid device was replaced.
- In 2020, two additional single-phase reclosers will be installed.
- In 2020, accelerating the trim cycle will be evaluated for this circuit.
- In 2020, additional single-phase reclosers will be evaluated for this circuit.
- In 2020, a section of this circuit will be evaluated for reconfiguration.
- In 2020, a switch at the substation will be replaced.

18 Circuit 53601 -- DALMATIA 36-01

Performance Analysis

The DALMATIA 36-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On January 16, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 735 customers for up to 182 minutes resulting in 110,650 CMI.

In total, the DALMATIA 36-01 circuit had 57 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (23); Scheduled Outage (20); Unknown (7); animal contacts (6); equipment failure (1).

Remedial Actions

- In 2020, fusing was installed at two locations. One additional fuse will be installed.
- In 2020, two additional single-phase sectionalizing devices will be installed.
- In 2020, an additional single-phase recloser will be installed and another evaluated.
- In 2020, additional fusing will be evaluated.
- In 2020, full circuit trimming will be performed.
- In 2022, a section of single-phase will be relocated.

19 Circuit 59002 -- MIFFLINTOWN 90-02

Performance Analysis

The MIFFLINTOWN 90-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On August 18, 2019, during a period of lightning, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,075 customers for up to 243 minutes resulting in 179,232 CMI.

On March 3, 2020, during a period of strong wind, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 2,244 customers for up to 368 minutes resulting in 188,114 CMI.

In total, the MIFFLINTOWN 90-02 circuit had 94 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (24); equipment failure (22); Unknown (21); Scheduled Outage (12); animal contacts (7); nothing found (4); vehicles (3); other (1).

Remedial Actions

- In 2019, two single-phase sectionalizing devices were installed.
- In 2019, additional animal guarding was installed.
- In 2019, additional single-phase fusing was installed.
- In 2020, an additional single-phase recloser was installed.
- In 2020, an additional single-phase fuse was installed, and another will be installed.
- In 2020, additional animal guarding will be installed.
- In 2020, a new line and terminal at MIFFLINTOWN substation will be installed.
- In 2020, an additional single-phase recloser will be evaluated.
- In 2020, a section of single-phase will be evaluated for reconductoring.
- In 2020, a new Smart Grid device will be evaluated.
- In 2021, full circuit trimming will be performed.

20 Circuit 45902 -- AUBURN 59-02

Performance Analysis

The AUBURN 59-02 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On October 27, 2019, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 403 customers for up to 852 minutes resulting in 265,096 CMI.

In total, the AUBURN 59-02 circuit had 103 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (36); tree related (22); Unknown (22); animal contacts (8); equipment failure (7); nothing found (5); vehicles (3).

Remedial Actions

- In 2019, a section of three-phase was reconductored.
- In 2019, several hazard trees were removed.
- In 2020, additional fusing was installed at several locations with more to be done in 2020.
- In 2020, a dissimilar metal connection was remediated.
- In 2020, multiple cross arms will be replaced.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2021, the AUBURN substation will be configured to be remotely transferrable.
- In 2021, a section of this circuit will be transferred to a new line.

21 Circuit 40201 -- BEAR GAP 02-01

Performance Analysis

The BEAR GAP 02-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the BEAR GAP 02-01 circuit had 141 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (57); Scheduled Outage (26); Unknown (24); animal contacts (15); equipment failure (12); nothing found (7).

Remedial Actions

- In 2019, additional fusing was installed at eight locations.
- In 2020, a single-phase recloser was replaced.
- In 2020, additional fusing will be installed at four locations.
- In 2020, full circuit trimming will be performed.
- In 2020, a section of existing conductor will be relocated and reconductored.
- In 2020, several sections of difficult-to-access conductor will be evaluated for relocation.
- In 2021, four single-phase reclosers will be installed.

- In 2021, a single-phase recloser will be replaced.

22 Circuit 13704 -- SCHNECKSVILLE 37-04

Performance Analysis

The SCHNECKSVILLE 37-04 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On May 5, 2020, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,570 customers for up to 105 minutes resulting in 102,530 CMI.

In total, the SCHNECKSVILLE 37-04 circuit had 68 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (19); Unknown (19); animal contacts (13); equipment failure (8); tree related (6); vehicles (2); nothing found (1).

Remedial Actions

- In 2020, a switch will be replaced with a Smart Grid device.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, the protection scheme for this circuit will be optimized.
- In 2020, additional fusing will be evaluated for installation in 2020.
- In 2021, three additional single-phase reclosers will be installed.

23 Circuit 40602 -- PINE GROVE 06-02

Performance Analysis

The PINE GROVE 06-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On May 29, 2020, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 436 customers for up to 258 minutes resulting in 111,547 CMI.

On November 16, 2019, an equipment failure occurred on an overhead conductor causing a load break disconnect switch to be interrupted. This outage affected 1,915 customers for up to 476 minutes resulting in 160,879 CMI.

In total, the PINE GROVE 06-02 circuit had 111 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (37); Scheduled Outage (22); equipment failure (17); animal contacts (15); Unknown (9); vehicles (5); nothing found (3); other (3).

Remedial Actions

- In 2019, an additional Smart Grid device was installed.
- In 2019, an additional single-phase recloser was installed.
- In 2019, two poles were replaced.
- In 2019, ten additional locations received fusing.
- In 2019, a drone patrol was performed. As a result, several cross-arms, several splices, and a pole were replaced.
- In 2020, an additional single-phase recloser was installed.
- In 2020, a section of single-phase line will be reconductored to three-phase, and the protection scheme will be upgraded.
- In 2021, a section of difficult-to-access single-phase will be relocated.
- In 2021, full circuit trimming will be performed.

24 Circuit 11303 -- EMMAUS 13-03

Performance Analysis

The EMMAUS 13-03 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 21, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,675 customers for up to 665 minutes resulting in 159,706 CMI.

In total, the EMMAUS 13-03 circuit had 71 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (23); Unknown (16); animal contacts (13); Scheduled Outage (10); equipment failure (7); nothing found (2).

Remedial Actions

- In 2019, additional animal guarding was installed at 10 locations.
- In 2019, two new Smart Grid devices were installed.
- In 2020, additional fusing was installed at 5 locations with 5 more to be performed.
- In 2021, single-phase reclosers will be installed at eight locations.
- In 2021, a section of difficult-to-access conductor will be relocated.
- In 2022, a section of difficult-to-access conductor will be relocated.

25 Circuit 22905 -- HARWOOD 29-05

Performance Analysis

The HARWOOD 29-05 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On February 27, 2020, during a period of strong wind, an equipment failure occurred on an overhead transformer causing a sectionalizing device to be interrupted. This outage affected 4,299 customers for up to 284 minutes resulting in 512,107 CMI.

In total, the HARWOOD 29-05 circuit had 33 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (16); equipment failure (8); Scheduled Outage (5); contact or dig in (1); nothing found (1); other (1); tree related (1).

Remedial Actions

- In 2020, a section of conductor was transferred to an adjacent line.
- In 2020, four dissimilar metal connections were remediated.
- In 2020, a Proactive Circuit Analysis will be performed.

26 Circuit 14501 -- SCHOENECK 45-01

Performance Analysis

The SCHOENECK 45-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the SCHOENECK 45-01 circuit had 29 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (9); equipment failure (7); Unknown (5); animal contacts (2); contact or dig in (2); nothing found (2); Scheduled Outage (2).

Remedial Actions

- In 2020, additional fusing was installed at two locations.
- In 2020, additional single-phase reclosers will be installed at two locations on this circuit.
- In 2020, relocating a section of difficult-to-access conductor will be evaluated.
- In 2020, a section of conductor will be evaluated for extension.
- In 2020, the protection scheme for this circuit will be optimized.
- In 2021, additional single-phase reclosers will be installed at three locations on this circuit.

27 Circuit 22401 -- MORGAN 24-01

Performance Analysis

The MORGAN 24-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 19, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a load break disconnect switch to be interrupted. This outage affected 231 customers for up to 797 minutes resulting in 125,909 CMI.

In total, the MORGAN 24-01 circuit had 37 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (13); equipment failure (9); animal contacts (4); Scheduled Outage (4); tree related (3); contact or dig in (1); nothing found (1); other (1); vehicles (1).

Remedial Actions

- In 2019, additional animal guarding was installed.
- In 2020, a dissimilar metal connection was replaced.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, fusing will be installed at four locations.
- In 2020, an existing recloser will be upgraded.
- In 2020, numerous porcelain cutouts will be replaced.

28 Circuit 24401 -- TINKER 44-01

Performance Analysis

The TINKER 44-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the TINKER 44-01 circuit had 119 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (39); tree related (37); Scheduled Outage (16); equipment failure (14); animal contacts (7); nothing found (4); other (2).

Remedial Actions

- In 2020, full circuit trimming will be performed.
- In 2020, multiple poles were replaced.
- In 2020, several dissimilar metal connections will be replaced.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, a new single-phase recloser will be installed.
- In 2020, an additional sectionalizing device will be installed.
- In 2020, communications will be upgraded on several Smart Grid devices.

29 Circuit 20402 -- ASHFIELD 04-02

Performance Analysis

The ASHFIELD 04-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On April 26, 2020, during a period of strong wind, a tree contacted a pole or pole arm causing a sectionalizing device to be interrupted. This outage affected 660 customers for up to 199 minutes resulting in 108,193 CMI.

On June 19, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,213 customers for up to 667 minutes resulting in 649,398 CMI.

In total, the ASHFIELD 04-02 circuit had 70 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (22); animal contacts (15); tree related (12); Unknown (9); equipment failure (8); vehicles (2); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2020, a new Smart Grid device was installed.
- In 2019, a single-phase recloser was installed.
- In 2020, a tie to the PALMERTON 32-01 will be evaluated.
- In 2020, a section of single-phase will be evaluated for relocation.
- In 2021, additional fusing will be installed at five locations.

30 Circuit 63404 -- HONEYBROOK 34-04

Performance Analysis

The HONEYBROOK 34-04 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On April 30, 2020, during a period of heavy rain, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 1,354 customers for up to 610 minutes resulting in 127,643 CMI.

In total, the HONEYBROOK 34-04 circuit had 42 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (22); tree related (5); equipment failure (4); nothing found (3); Scheduled Outage (3); other (2); vehicles (2); animal contacts (1).

Remedial Actions

- In 2019, four additional single-phase sectionalizing devices were installed.
- In 2019, full circuit trimming was performed.
- In 2019 and 2020, 18 poles were replaced.
- In 2020, two crossarms were replaced.
- In 2020, two sets of insulators were replaced.
- In 2020, four additional single-phase sectionalizing devices will be installed.
- In 2020, a three-phase primary underground feed was re-designed.
- In 2020, additional three-phase sectionalizing devices will be evaluated.
- In 2020, a section of single-phase will be evaluated for resourcing.

31 Circuit 17801 -- GILBERT 78-01

Performance Analysis

The GILBERT 78-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On September 24, 2019, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,501 customers for up to 309 minutes resulting in 122,721 CMI.

In total, the GILBERT 78-01 circuit had 51 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (19); tree related (14); equipment failure (9); Unknown (3); animal contacts (2); nothing found (2); vehicles (2).

Remedial Actions

- In 2019, a section of this circuit was transferred to a neighboring circuit.
- In 2020, full circuit trimming will be performed.
- In 2020, multiple poles and arms were replaced.
- In 2020, additional animal guarding was installed with more to be installed later this year.
- In 2020, several sections of underground cable will be replaced.
- In 2020, additional fusing will be installed at several locations.

32 Circuit 28602 -- BLYTHEBURN 86-02

Performance Analysis

The BLYTHEBURN 86-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On September 11, 2019, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 349 customers for up to 584 minutes resulting in 162,681 CMI.

On January 20, 2020, a vehicle contacted a pole causing a sectionalizing device to be interrupted. This outage affected 761 customers for up to 228 minutes resulting in 173,508 CMI.

In total, the BLYTHEBURN 86-02 circuit had 57 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (24); Scheduled Outage (15); Unknown (7); equipment failure (4); animal contacts (3); nothing found (3); vehicles (1).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2019, an additional single-phase recloser was installed.
- In 2019, a section of difficult-to-access single-phase was relocated.
- In 2019, a Proactive Circuit Analysis was performed. As a result, several cross arms were replaced.
- In 2020, an additional Smart Grid device was installed.
- In 2020, a drone patrol identified several minor items which will be remediated in 2020.
- In 2020, undergrounding will be evaluated for a section of heavily wooded conductor.
- In 2020, an additional single-phase recloser will be evaluated for this circuit.
- In 2020, hot spot trimming will be evaluated for a section of heavily wooded conductor.
- In 2020, a substation conversion will be evaluated.
- In 2021, a three-phase section will be reconductored.
- In 2021, six new single-phase reclosers will be installed.

33 Circuit 63201 -- MORGANTOWN 32-01

Performance Analysis

The MORGANTOWN 32-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the MORGANTOWN 32-01 circuit had 46 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (15); equipment failure (13); tree related (6); Unknown (6); animal contacts (2); nothing found (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2019, two trip savers were installed.
- In 2019, tree trimming maintenance was performed.
- In 2020, one pole will be proactively replaced.
- In 2020, nine crossarms will be replaced.
- In 2020, two insulators will be replaced.
- In 2020, two single-phase sectionalizing devices were installed.
- In 2020, 11 poles were replaced.
- In 2020, two additional sectionalizing devices, one fuse and one single-phase recloser will be installed.
- In 2020, a new section of cable will be bored to create a loop in a development.
- In 2021, cable rejuvenation will be conducted in one URD.
- In 2022, a three-phase relocation will be completed.
- In 2024, full circuit trimming will be performed.

34 Circuit 41602 -- CLEVELAND 16-02

Performance Analysis

The CLEVELAND 16-02 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On April 21, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 249 customers for up to 685 minutes resulting in 169,082 CMI.

In total, the CLEVELAND 16-02 circuit had 73 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (27); animal contacts (14); Scheduled Outage (12); equipment failure (10); Unknown (8); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2019, a single-phase recloser was installed.
- In 2019, a new Smart Grid device was installed.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2020, multiple cross arms and transformer cutouts will be replaced as the result of a line patrol.
- In 2020, hot spot trimming will be evaluated for this circuit.
- In 2021, multiple transformer cutouts will be replaced.
- In 2022, full circuit trimming will be performed.

35 Circuit 28402 -- HARTLAND 84-02

Performance Analysis

The HARTLAND 84-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the HARTLAND 84-02 circuit had 55 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (17); Scheduled Outage (11); equipment failure (10); Unknown (10); animal contacts (4); nothing found (2); other (1).

Remedial Actions

- In 2020, a new single-phase recloser was installed.
- In 2020, fusing was installed at 17 locations.
- In 2020, full circuit trimming will be performed.
- In 2020, a section of difficult-to-access conductor will be relocated.
- In 2020, a section of this line will be transferred to the HARTLAND 84-03.
- In 2020, a section of difficult-to-access conductor will be evaluated for relocation.

36 Circuit 24902 -- WHITE HAVEN 49-02

Performance Analysis

The WHITE HAVEN 49-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the WHITE HAVEN 49-02 circuit had 55 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (16); tree related (11); equipment failure (10); Scheduled Outage (7); animal contacts (6); nothing found (3); other (1); vehicles (1).

Remedial Actions

- In 2020, a Proactive Circuit Review will be performed.
- In 2020, full circuit trimming will be performed.
- In 2020, a section of difficult-to-access three-phase conductor will be evaluated for relocation.
- In 2022, an existing recloser will be replaced with a Smart Grid device.

37 Circuit 46001 -- BERWICK 60-01

Performance Analysis

The BERWICK 60-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On August 15, 2019, during a period of lightning, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,330 customers for up to 273 minutes resulting in 281,135 CMI.

In total, the BERWICK 60-01 circuit had 62 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (23); equipment failure (13); animal contacts (8); Scheduled Outage (6); Unknown (6); nothing found (4); vehicles (2).

Remedial Actions

- In 2019, multiple porcelain cutouts were replaced.
- In 2021, a section of difficult-to-access single-phase will be relocated.
- In 2021, an additional single-phase recloser will be installed.

38 Circuit 55002 -- NEWPORT 50-02

Performance Analysis

The NEWPORT 50-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On January 26, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 733 customers for up to 141 minutes resulting in 102,700 CMI.

On November 27, 2019, during a period of strong wind, a tree contacted a pole or pole arm causing a load break fuse to operate. This outage affected 307 customers for up to 1,017 minutes resulting in 147,529 CMI.

In total, the NEWPORT 50-02 circuit had 56 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (33); equipment failure (10); Scheduled Outage (6); animal contacts (5); nothing found (1); vehicles (1).

Remedial Actions

- In 2019, additional animal guarding was installed.
- In 2020, two fuses were installed, with one more scheduled.
- In 2020, two single-phase sectionalizing devices were installed.
- In 2020, a new Smart Grid device will be installed.
- In 2020, five locations will be animal guarded.
- In 2020, a section of single-phase will be reconductored.
- In 2023, full circuit trimming will be performed.

39 Circuit 27403 -- KEYSER AVENUE 74-03

Performance Analysis

The KEYSER AVENUE 74-03 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On August 3, 2019, an equipment failure occurred on an overhead conductor causing an air break to be interrupted. This outage affected 664 customers for up to 172 minutes resulting in 114,201 CMI.

On July 30, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,370 customers for up to 779 minutes resulting in 372,821 CMI.

In total, the KEYSER AVENUE 74-03 circuit had 14 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (5); animal contacts (3); equipment failure (2); Scheduled Outage (2); tree related (1); vehicles (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2020, an existing recloser was converted to triple-single operation.
- In 2020, a new Smart Grid device was installed.
- In 2020, additional sectionalizing will be evaluated for a heavily wooded section of conductor.
- In 2020, voltage control will be upgraded on this circuit.
- In 2022, 13 poles will be replaced.

40 Circuit 28102 -- TWIN LAKES 81-02

Performance Analysis

The TWIN LAKES 81-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On December 3, 2019, during a period of ice/sleet/snow, a tree contacted an overhead conductor causing a load break fuse to operate. This outage affected 131 customers for up to 882 minutes resulting in 102,171 CMI.

On February 27, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,091 customers for up to 123 minutes resulting in 133,571 CMI.

In total, the TWIN LAKES 81-02 circuit had 74 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (27); Scheduled Outage (17); animal contacts (14); equipment failure (7); Unknown (7); nothing found (1); other (1).

Remedial Actions

- In 2020, additional fusing was installed at multiple locations.
- In 2020, six transformers were replaced.
- In 2020, full circuit trimming will be performed.
- In 2020, additional animal guarding will be installed.
- In 2020, dissimilar metal connections will be remediated at four locations.
- In 2020, an additional single-phase recloser will be evaluated.

41 Circuit 59202 -- THOMPSONTOWN 92-02

Performance Analysis

The THOMPSONTOWN 92-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the THOMPSONTOWN 92-02 circuit had 112 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (43); Scheduled Outage (24); Unknown (22); equipment failure (11); animal contacts (6); vehicles (5); nothing found (1).

Remedial Actions

- In 2019, a section of line was storm hardened with new conductor, upgraded poles, and static tree wire.
- In 2019, a Smart Grid device was installed.
- In 2019, over 400 hazard trees were removed.
- In 2019, fusing was installed at two locations.
- In 2019, an additional single-phase sectionalizing device was installed.
- In 2020, a three-phase protective device was upgraded to a Smart Grid device.
- In 2020, additional fusing was installed, with more planned for later in the year.
- In 2020, four single-phase sectionalizing devices will be installed.
- In 2020, a section of inaccessible conductor will be relocated.
- In 2020, additional animal guarding will be installed.
- In 2020, a section of single-phase will be evaluated for reconductoring.
- In 2021, full circuit trimming will be performed.
- In 2021, an additional Smart Grid device will be installed.
- In 2022, two sections of single-phase will be relocated underground.

42 Circuit 50503 -- MECHANICSBURG 05-03

Performance Analysis

The MECHANICSBURG 05-03 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On June 11, 2020, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 1,353 customers for up to 235 minutes resulting in 122,459 CMI.

On July 19, 2019, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,022 customers for up to 229 minutes resulting in 125,661 CMI.

In total, the MECHANICSBURG 05-03 circuit had 25 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (8); animal contacts (6); tree related (6); equipment failure (3); other (2).

Remedial Actions

- In 2020, a new three-phase sectionalizing device will be evaluated.
- In 2020, additional animal guarding will be installed.
- In 2021, full circuit trimming will be performed.

43 Circuit 13606 -- RICHLAND 36-06

Performance Analysis

The RICHLAND 36-06 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 29, 2019, during a period of extreme temperatures, an equipment failure occurred on an overhead splice causing a circuit breaker to trip to lockout. This outage affected 2,074 customers for up to 81 minutes resulting in 140,602 CMI.

In total, the RICHLAND 36-06 circuit had 48 outages between July 2019 and June 2020, with the causes breaking down as follows: animal contacts (13); Unknown (10); Scheduled Outage (9); equipment failure (8); tree related (7); nothing found (1).

Remedial Actions

- In 2020, a section of this circuit was reconductored.
- In 2020, a section of aerial cable will be replaced.
- In 2020, additional animal guarding will be installed.
- In 2020, additional fusing will be installed.
- In 2021, two single-phase reclosers will be replaced.

44 Circuit 40603 -- PINE GROVE 06-03

Performance Analysis

The PINE GROVE 06-03 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On April 24, 2020, a vehicle contact affected 1,172 customers for up to 475 minutes resulting in 201,443 CMI.

In total, the PINE GROVE 06-03 circuit had 76 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (16); Unknown (15); tree related (14); animal contacts (12); equipment failure (9); nothing found (6); vehicles (3); contact or dig in (1).

Remedial Actions

- In 2020, an additional Smart Grid device was installed.
- In 2020, a cross arm and transformer were replaced.
- In 2020, four poles were replaced.
- In 2020, a section of difficult-to-access three-phase conductor was relocated and reconductored.
- In 2020, a section of single-phase will be transferred to an adjacent circuit.
- In 2021, a single-phase recloser will be replaced.

- In 2022, full circuit trimming will be performed.

45 Circuit 12802 -- MICKLEYS 28-02

Performance Analysis

The MICKLEYS 28-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the MICKLEYS 28-02 circuit had 10 outages between July 2019 and June 2020, with the causes breaking down as follows: equipment failure (6); Scheduled Outage (2); animal contacts (1); Unknown (1).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2020, additional animal guarding will be installed.
- In 2020, additional fusing will be evaluated for two locations.

46 Circuit 45302 -- WEST BERWICK 53-02

Performance Analysis

The WEST BERWICK 53-02 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 31, 2019, during a period of strong wind, an equipment failure occurred on an overhead splice causing an interruption. This outage affected 446 customers for up to 317 minutes resulting in 122,937 CMI.

In total, the WEST BERWICK 53-02 circuit had 63 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (21); equipment failure (12); Scheduled Outage (12); animal contacts (10); Unknown (6); nothing found (2).

Remedial Actions

- In 2019, a recloser was replaced with a telemetric triple-single recloser.
- In 2020, two additional single-phase reclosers will be installed.
- In 2021, a section of difficult-to-access conductor will be relocated.
- In 2022, a section of difficult-to-access conductor will be relocated.

47 Circuit 26601 -- BROOKSIDE 66-01

Performance Analysis

The BROOKSIDE 66-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the BROOKSIDE 66-01 circuit had 51 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (13); equipment failure (12); Unknown (12); Scheduled Outage (6); animal contacts (3); other (2); vehicles (2); nothing found (1).

Remedial Actions

- In 2019, a single-phase recloser was installed.
- In 2019, several porcelain cutouts were replaced with polymer.
- In 2019, additional fusing was installed.
- In 2020, additional fusing will be installed at multiple locations.
- In 2020, full circuit trimming will be performed.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2022, a new Smart Grid device will be installed.
- In 2022, a section of difficult-to-access single-phase will be relocated and reconductored.

48 Circuit 26602 -- BROOKSIDE 66-02

Performance Analysis

The BROOKSIDE 66-02 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On June 3, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,709 customers for up to 688 minutes resulting in 415,595 CMI.

In total, the BROOKSIDE 66-02 circuit had 15 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (5); tree related (3); animal contacts (2); equipment failure (2); Scheduled Outage (2); other (1).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2020, a Smart Grid device was replaced.
- In 2020, several dissimilar metal connections will be remediated.
- In 2020, numerous porcelain cutouts will be replaced.

49 Circuit 14801 -- TREICHLERS 48-01

Performance Analysis

The TREICHLERS 48-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 21, 2019, an equipment failure occurred on an overhead splice causing a circuit breaker to trip to lockout. This outage affected 1,895 customers for up to 542 minutes resulting in 223,994 CMI.

In total, the TREICHLERS 48-01 circuit had 75 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (23); Scheduled Outage (14); animal contacts (13); equipment failure (10); tree related (10); other (3); nothing found (2).

Remedial Actions

- In 2019, the transfer capability for this circuit was improved.
- In 2019, full circuit trimming was performed.
- In 2019, additional voltage regulators were installed increasing transfer capability.
- In 2020, additional fusing was installed at two locations.
- In 2020, three additional single-phase reclosers will be installed.
- In 2020, additional fusing was installed at three locations.
- In 2020, existing connections with dissimilar metals will be replaced.
- In 2020, additional animal guarding was installed.
- In 2020, a section of difficult-to-access conductor will be evaluated for relocation and extension.
- In 2022, a section of difficult-to-access conductor will be relocated or undergrounded.

50 Circuit 57403 -- SPANGLER 74-03

Performance Analysis

The SPANGLER 74-03 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the SPANGLER 74-03 circuit had 54 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (29); tree related (16); animal contacts (3); equipment failure (2); nothing found (2); Scheduled Outage (2).

Remedial Actions

- In 2019, a trip saver was installed.
- In 2020, additional animal guarding will be installed
- In 2020, four single-phase reclosers will be installed.
- In 2020, 9 additional fuses will be installed.
- In 2020, the coordination settings for this circuit will be optimized.

- In 2020, additional fusing will be evaluated.
- In 2021, full circuit trimming will be performed.

51 Circuit 21901 -- HUMBOLDT 19-01

Performance Analysis

The HUMBOLDT 19-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the HUMBOLDT 19-01 circuit had 77 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (32); equipment failure (17); animal contacts (9); Scheduled Outage (9); Unknown (7); nothing found (2); vehicles (1).

Remedial Actions

- In 2019, this circuit was reconfigured.
- In 2019, two additional reclosers were installed.
- In 2019, two reclosers were relocated.
- In 2020, additional sectionalizing will be evaluated.
- In 2020, full circuit trimming will be performed.

52 Circuit 24602 -- VARDEN 46-02

Performance Analysis

The VARDEN 46-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the VARDEN 46-02 circuit had 93 outages between July 2019 and June 2020, with the causes breaking down as follows: equipment failure (25); tree related (25); animal contacts (17); Scheduled Outage (10); Unknown (9); vehicles (3); nothing found (2); other (2).

Remedial Actions

- In 2019, additional animal guarding was installed at multiple locations.
- In 2020, single-phase reclosers will be evaluated for nine locations.
- In 2020, additional fusing will be installed.
- In 2020, additional animal guarding will be installed.
- In 2020, two single-phase reclosers will be installed.
- In 2020, numerous porcelain cutouts will be replaced.
- In 2020, several poles will be replaced.
- In 2021, several sections of line will be reconductored.

53 Circuit 25501 -- MADISONVILLE 55-01

Performance Analysis

The MADISONVILLE 55-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the MADISONVILLE 55-01 circuit had 80 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (24); Scheduled Outage (16); Unknown (16); equipment failure (11); animal contacts (6); vehicles (5); nothing found (1); other (1).

Remedial Actions

- In 2019, a new single-phase recloser was installed.
- In 2019, an existing three-phase recloser was replaced.
- In 2019, several single-phase reclosers were replaced.
- In 2019, additional fusing was installed at multiple locations.
- In 2020, additional animal guarding was installed.
- In 2020, multiple poles and cross arms were replaced.
- In 2020, full circuit trimming will be performed.
- In 2020, two new single-phase reclosers were installed with five more planned.
- In 2020, multiple capacitor banks will be upgraded.

54 Circuit 43304 -- WATSON 33-04

Performance Analysis

The WATSON 33-04 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On October 3, 2019, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 337 customers for up to 813 minutes resulting in 273,964 CMI.

In total, the WATSON 33-04 circuit had 59 outages between July 2019 and June 2020, with the causes breaking down as follows: equipment failure (14); Unknown (14); Scheduled Outage (12); tree related (9); animal contacts (7); vehicles (2); nothing found (1).

Remedial Actions

- In 2020, a section of this circuit was re-sourced and a section of difficult-to-access single-phase was relocated.
- In 2022, a section of difficult-to-access single-phase will be relocated and storm hardened.
- In 2022, an underground dip will be replaced.
- In 2022, a section of difficult-to-access three-phase will be relocated.

55 Circuit 11402 -- FARMERSVILLE 14-02

Performance Analysis

The FARMERSVILLE 14-02 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On June 12, 2020, a vehicle contacted a pole. This outage affected 2,484 customers for up to 513 minutes resulting in 368,095 CMI.

In total, the FARMERSVILLE 14-02 circuit had 42 outages between July 2019 and June 2020, with the causes breaking down as follows: animal contacts (9); Scheduled Outage (9); tree related (9); equipment failure (6); Unknown (6); vehicles (2); nothing found (1).

Remedial Actions

- In 2020, two locations with dissimilar metal connections were remediated.
- In 2020, a Smart Grid device was replaced.
- In 2020, additional locations with dissimilar metal connections will be remediated.
- In 2020, additional animal guarding will be installed.
- In 2020, additional fusing will be installed at several locations.

56 Circuit 52403 -- GREEN PARK 24-03

Performance Analysis

The GREEN PARK 24-03 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On March 13, 2020, a vehicle contact occurred causing a recloser to trip to lockout. This outage affected 406 customers for up to 313 minutes resulting in 102,700 CMI.

In total, the GREEN PARK 24-03 circuit had 71 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (26); Unknown (17); equipment failure (10); Scheduled Outage (7); animal contacts (6); other (2); contact or dig in (1); nothing found (1); vehicles (1).

Remedial Actions

- In 2019, four fuses were installed
- In 2019, two single-phase reclosers were installed
- In 2020, two sections of single-phase were relocated.
- In 2020, a section of single-phase will be relocated underground.
- In 2020, a single-phase recloser will be installed.
- In 2021, an additional single-phase recloser will be installed.

57 Circuit 12202 -- FOGELSVILLE 22-02

Performance Analysis

The FOGELSVILLE 22-02 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On November 8, 2019, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 519 customers for up to 667 minutes resulting in 280,360 CMI.

In total, the FOGELSVILLE 22-02 circuit had 29 outages between July 2019 and June 2020, with the causes breaking down as follows: Unknown (6); animal contacts (5); tree related (5); equipment failure (4); Scheduled Outage (4); nothing found (3); Improper Operation (1); vehicles (1).

Remedial Actions

- In 2019, a section of underground cable was replaced.
- In 2020, additional fusing was installed at two locations, with three more to be installed this year.
- In 2020, additional animal guarding will be installed.
- In 2021, an additional single-phase recloser will be installed.
- In 2021, additional fusing will be installed.

58 Circuit 64801 -- MOUNT NEBO 48-01

Performance Analysis

The MOUNT NEBO 48-01 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the MOUNT NEBO 48-01 circuit had 70 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (23); Unknown (16); equipment failure (11); animal contacts (9); Scheduled Outage (9); nothing found (1); vehicles (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2020, a new single-phase recloser was installed.
- In 2020, an additional single-phase recloser was installed, and several more will be installed.
- In 2020, two existing reclosers will be replaced.
- In 2020, a section of difficult-to-access conductor will be relocated.
- In 2020, additional fusing will be installed.
- In 2020, an existing sectionalizing device will be replaced.

- In 2020, one additional fuse was installed with one more to be completed.
- In 2020, two additional single-phase reclosers were installed.
- In 2020, multiple animal guards will be installed.
- In 2020, an additional Smart Grid device will be installed.
- In 2020, a section of single-phase will be evaluated for reconductoring.
- In 2020, a section of single-phase will be evaluated for relocation.
- In 2020, two existing single-phase reclosers will be proactively replaced.
- In 2020, one existing three-phase recloser will be replaced and additional downstream sectionalizing devices will be installed.
- In 2020, a multiphase drone inspection will be conducted.
- In 2021, two existing single-phase reclosers will be replaced and additional downstream fusing will be installed.
- In 2021, several locations with dissimilar conductor will be remediated.

59 Circuit 27501 -- WEISSPORT 75-01

Performance Analysis

The WEISSPORT 75-01 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On July 28, 2019, an equipment failure occurred causing a recloser to trip to lockout. This outage affected 673 customers for up to 163 minutes resulting in 100,753 CMI.

On October 23, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 663 customers for up to 445 minutes resulting in 135,577 CMI.

In total, the WEISSPORT 75-01 circuit had 55 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (16); Unknown (10); animal contacts (9); tree related (9); equipment failure (7); nothing found (2); other (1); vehicles (1).

Remedial Actions

- In 2019, fusing was installed at five locations.
- In 2019, an existing recloser was replaced.
- In 2020, fusing will be installed at four locations.
- In 2020, three new reclosers will be installed.
- In 2020, a section of this circuit will be reconfigured.
- In 2020, a section of conductor will be evaluated for upgrading and extension.
- In 2020, a new single-phase tie will be evaluated for this circuit.
- In 2022, full circuit trimming will be performed.

60 Circuit 29702 -- ANGELS 91-02

Performance Analysis

The ANGELS 91-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On December 3, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 625 customers for up to 180 minutes resulting in 111,997 CMI.

On January 17, 2020, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 410 customers for up to 411 minutes resulting in 152,223 CMI.

In total, the ANGELS 91-02 circuit had 62 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (23); animal contacts (13); Unknown (13); equipment failure (7); Scheduled Outage (6).

Remedial Actions

- In 2019, multiple cross arms were replaced.
- In 2019, additional animal guarding was installed at multiple locations with more planned for 2020.
- In 2019, multiple transformers were replaced on this circuit.
- In 2020, several poles and cross arms were replaced.
- In 2020, an existing recloser was replaced.
- In 2020, hot spot trimming will be performed on this circuit.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, a section of three-phase will be reconductored.
- In 2020, two new single-phase recloser will be installed.
- In 2020, full circuit trimming will be performed.

61 Circuit 41902 -- REED 19-02

Performance Analysis

The REED 19-02 circuit experienced two outages of over 100,000 CMI between July 2019 and June 2020.

On September 7, 2019, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 1,093 customers for up to 430 minutes resulting in 142,517 CMI.

On January 16, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 189 customers for up to 637 minutes resulting in 120,355 CMI.

In total, the REED 19-02 circuit had 79 outages between July 2019 and June 2020, with the causes breaking down as follows: tree related (20); animal contacts (14); Scheduled Outage (14); Unknown (13); equipment failure (10); nothing found (7); vehicles (1).

Remedial Actions

- In 2019, an additional single-phase recloser was installed.
- In 2019, a three-phase recloser was replaced and additional fusing was installed.
- In 2019, additional fusing was installed.
- In 2019, a pole was relocated.
- In 2020, a single-phase recloser was replaced.
- In 2020, a section of single-phase conductor will be upgraded to three-phase.
- In 2021, full circuit trimming will be performed.

62 Circuit 45702 -- LINDEN 57-02

Performance Analysis

The LINDEN 57-02 circuit experienced no outages of over 100,000 CMI between July 2019 and June 2020.

In total, the LINDEN 57-02 circuit had 115 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (48); tree related (17); Unknown (17); equipment failure (13); animal contacts (8); nothing found (6); other (5); vehicles (1).

Remedial Actions

- In 2020, 80+ poles were replaced.
- In 2020, a two-mile section of conductor was replaced and relocated.
- In 2020, three additional fuses were installed.
- In 2020, additional animal guarding will be installed.

63 Circuit 65901 – SOUTH AKRON 59-01

Performance Analysis

The SOUTH AKRON 59-01 circuit experienced one outage of over 100,000 CMI between July 2019 and June 2020.

On July 18, 2019, during a period of strong wind, an equipment failure occurred on an overhead splice causing a circuit breaker to trip to lockout. This outage affected 1,826 customers for up to 309 minutes resulting in 226,109 CMI.

In total, the SOUTH AKRON 59-01 circuit had 53 outages between July 2019 and June 2020, with the causes breaking down as follows: Scheduled Outage (28); Unknown (8); equipment failure (6); animal contacts (4); tree related (4); nothing found (3).

Remedial Actions

- In 2019, a section three-phase was reconductored.
- In 2020, a single-phase recloser was installed.
- In 2020, full circuit trimming was performed.
- In 2020, three single-phase reclosers will be installed.
- In 2020, a multiphase drone inspection will be conducted.

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.

Cause Description	Trouble Cases	Percent of Trouble Cases	Customer Interruptions	Percent of Customer Interruptions	Customer Minutes	Percent of Customer Minutes
Animals	4,308	20.5%	64,692	5.5%	3,840,864	2.4%
Contact / Dig-In	172	0.8%	22,818	1.9%	1,135,921	0.7%
Directed by Non-PPL Authority	84	0.4%	10,705	0.9%	874,103	0.5%
Equipment Failures	5,365	25.6%	331,874	28.2%	27,438,819	17.2%
Improper Design	-	0.0%	-	0.0%	-	0.0%
Improper Installation	4	0.0%	1,774	0.2%	90,226	0.1%
Improper Operation	23	0.1%	10,487	0.9%	196,319	0.1%
Nothing Found	1,033	4.9%	57,104	4.9%	4,353,579	2.7%
Other Controllable	98	0.5%	10,668	0.9%	273,478	0.2%
Other Non Control	236	1.1%	14,339	1.2%	828,200	0.5%
Other Public	36	0.2%	8,732	0.7%	341,772	0.2%
Tree Related	8,913	42.5%	531,189	45.2%	110,018,447	69.0%
Unknown	-	0.0%	-	0.0%	-	0.0%
Vehicles	723	3.4%	111,730	9.5%	10,079,846	6.3%
Total	20,995	100.0%	1,176,112	100.0%	159,471,575	100.0%

Analysis of causes contributing to the majority of service interruptions:

Weather Conditions: PPL Electric records weather conditions, such as wind or lightning, as contributing factors to service interruptions, but does not code them as direct interruption causes. Therefore, some fluctuations in cause categories, especially tree- and equipment-related causes, are attributable to weather variations. For the current reporting period, weather was considered a significant contributing cause in 49% of cases, 58% of customer interruptions, and 77% of CMI.

Tree Related: Vegetation is one of the largest single contributors to the number of cases of trouble, customer interruptions and customer minutes. For the current reporting period, approximately 83% of the cases of trouble, 86% of the customer interruptions and 92% of the customer minutes attributed to tree related outages were weather-related.

Animals: Animals accounted for approximately 18% of PPL Electric's cases of trouble. Although this represents a significant number of cases, the effect on SAIFI and CAIDI is small because approximately 76% 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 PPL Electric substations have received animal guarding since the start of the program, and a complete effectiveness review of this strategy is being evaluated.

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. 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 38% of the cases of trouble, 51% 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 strong indicators of equipment condition or performance.

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

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

Inspection & Maintenance Goals/Objectives	Annual Budget	2nd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of structures)	509	509	167	167	292
Transmission arm replacements (# of arms)	24	30	23	23	26
Transmission air break switch inspections (# of switches)	2	4	2	2	3
Transmission surge arrester installations (# of sets)	1,500	609	608	609	608
Transmission structure inspections (# of activities)	18,241	5,923	5,923	10,368	10,368
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	901	312	190	497	531
Transmission reclearing (# of miles) 69 kV	1651	366	328	589	670
Transmission reclearing (# of miles) 138 kV	57	20	37	33	67
Transmission danger tree removals-Bulk Power (# of trees)	N/A				
Substation					
Substation batteries (# of activities)	1,061	54	80	907	916
Circuit breakers (# of activities)	99	1	18	8	38
Substation inspections (# of activities)	2,283	473	490	1,296	1,336
Transformer maintenance (# of activities)	1,393	133	134	229	236

Inspection & Maintenance Goals/Objectives	Annual Budget	2nd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	1,288	235	487	385	1,007
C-truss distribution poles (# of poles)	3,888	1,027	1,027	1,402	1,402
Capacitor (MVAR added)	1.5	1.2	0	1.2	0
OCR Replacements (# of)	0	0	0	0	0
Distribution pole inspections (# of poles)	69,900	18,136	20,254	26,200	28,318
Distribution line inspections (miles)	3,288	194	194	1,057	1,057
Group re-lamping (# of lamps)	24,100	12,000	11,733	13,000	12,981
Test sections of underground distribution cable	N/A	N/A	134	N/A	333
Distribution tree trimming (# of miles)	5,261	1,432	1,386	2,585	3,194
Distribution herbicide (# of acres)	N/A				
Distribution >18" removals within R/W (# of trees)	N/A				
Distribution hazard tree removals outside R/W (# of trees)	N/A				
LTN manhole inspections (# of)	324	162	69	324	178
LTN vault inspections (# of)	357	179	135	358	187
LTN network protector overhauls (# of)	85	43	21	86	34
LTN reverse power trip testing (# of)	36	18	8	36	13

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

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

Activity	2nd Quarter			Year-to-date	
	2020 Budget (000s)	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
Provide Electric Service	5,927	1,432	1,482	2,774	3,121
Vegetation Management	36,213	11,262	10,291	19,168	20,668
Customer Response	61,834	17,566	19,072	30,085	33,780
Reliability Maintenance	33,865	9,206	7,221	16,983	13,711
System Upgrade	7,235	1,960	1,165	5,237	4,272
Customer Service/Accounts	113,140	24,755	19,792	51,067	41,848
Others	38,045	9,721	12,319	18,706	22,239
Total O&M Expenses	296,258	75,902	71,342	144,020	139,639

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

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

Activity	2nd Quarter			Year-to-date	
	2020 Budget (000s)	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
New Service/Revenue	95,015	23,322	20,173	46,236	44,334
System Upgrade	337,320	83,381	87,673	167,556	165,814
Reliability & Maintenance	567,236	140,949	149,586	250,261	279,245
Customer Response	26,857	8,997	9,824	14,106	13,984
Other	22,667	3,698	1,762	11,270	(293)
Total	1,049,095	260,348	269,018	489,429	503,084

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

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

During the second quarter of 2020, 167 corrective work orders were created with the following breakdown by priority.

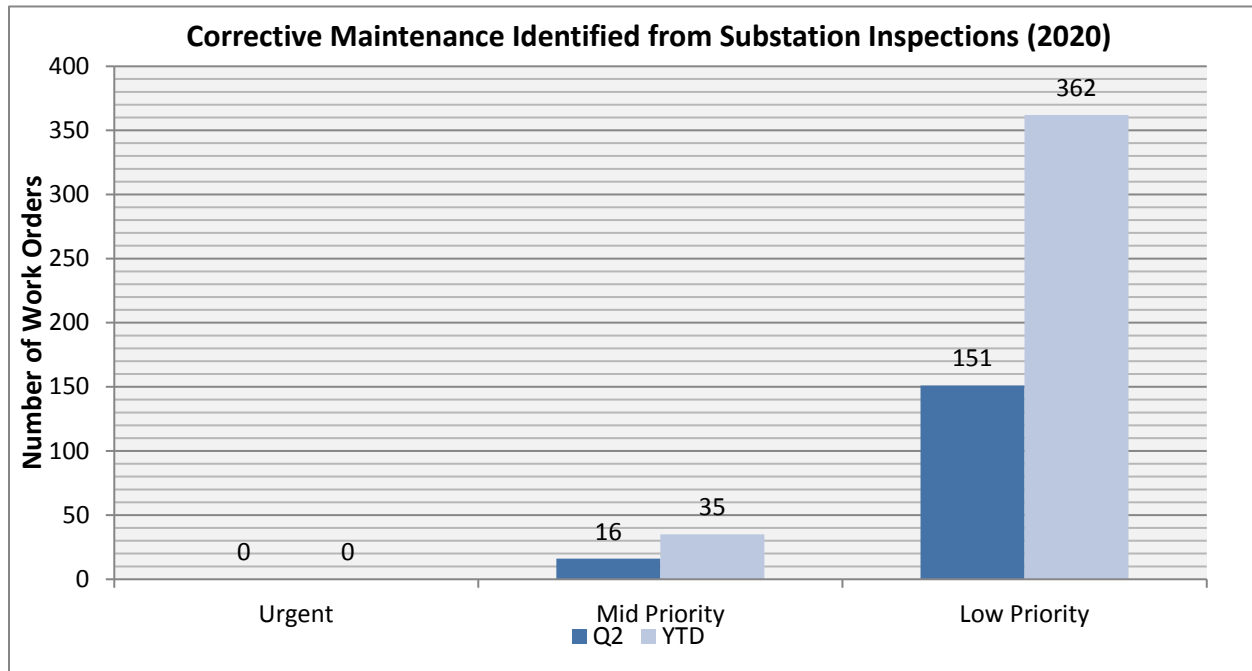


Figure 1: Corrective Maintenance Work Orders by Priority Level for second quarter and year-to-date 2020

(b) The Amount Spent on Substation Inspections

During the second quarter of 2020, PPL Electric spent approximately \$131,000 on substation inspections.

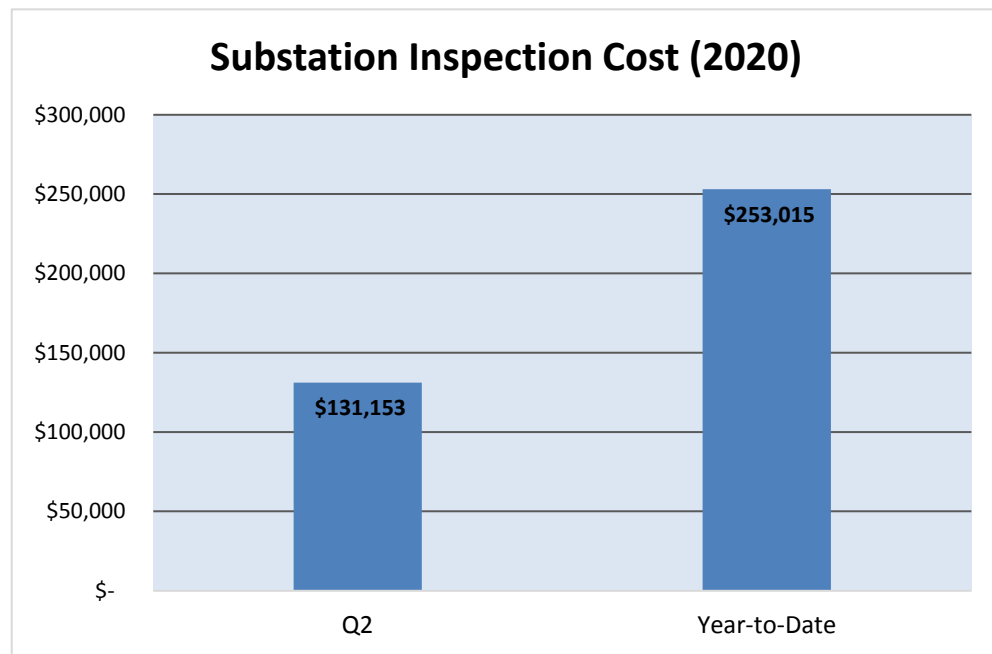


Figure 2: Substation Inspection Costs for second quarter and year-to-date 2020.

(c) The Amount Spent on Vegetation Management

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

(d) The Projected CMI Avoidance Due to Substation Inspections

The figure below shows the amount of CMI avoidance that PPL Electric has estimated for the second quarter and year-to-date. During second quarter of 2020, PPL Electric avoided a projected 450,000 CMI.

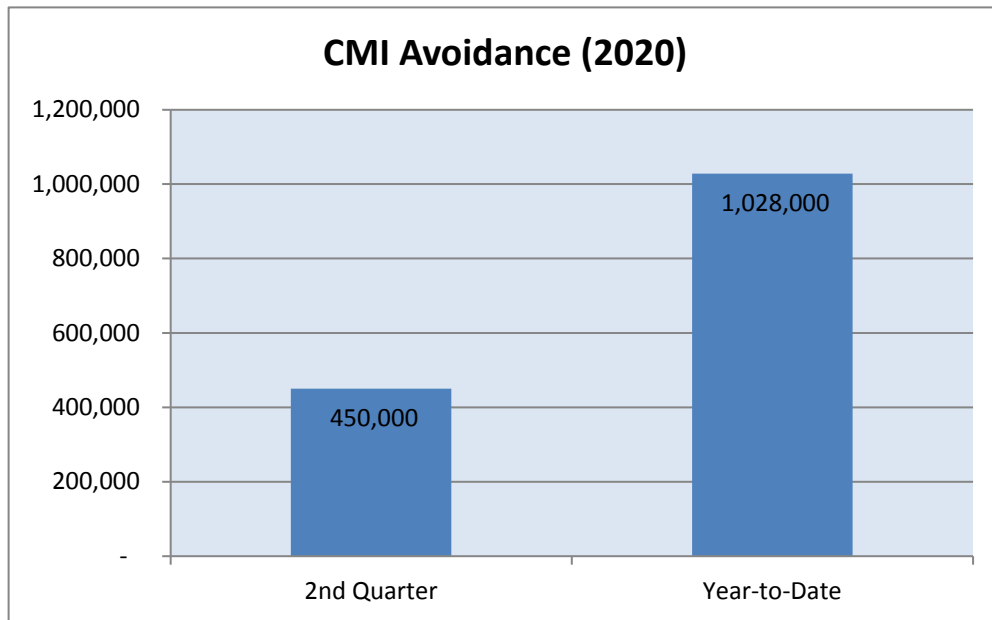


Figure 3: CMI Avoidance Due to Inspections for second quarter and year-to-date 2020

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

In the past three years, distribution substations have contributed a small amount toward the reliability metrics. During the second quarter of 2020, the Company interrupted about 27,000 customers for a total of approximately 453,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.

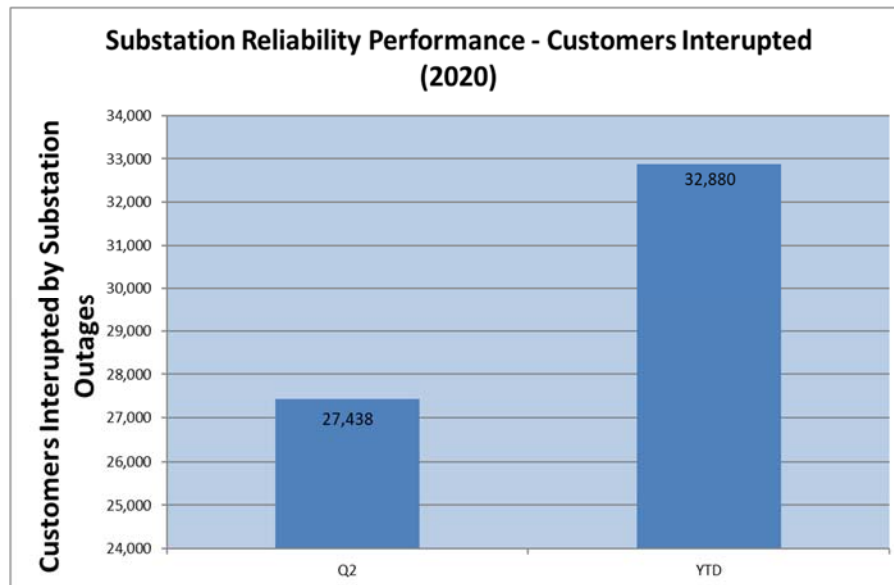


Figure 4: Substation Customers Interrupted for second quarter and year-to-date 2020

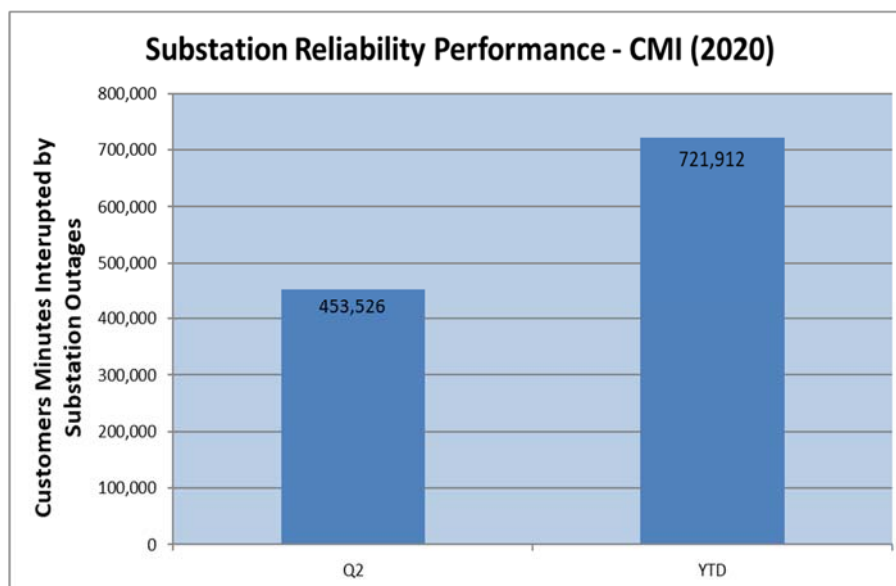


Figure 5: Substation Customer Minutes of Interruption for second quarter and year-to-date 2020

(f) Substation SAIFI Contribution

Overall, substation outages contributed approximately 7% of the total SAIFI experienced by PPL Electric customers in the second quarter of 2020. Historically, PPL Electric has ranked in the first quartile for Substation SAIFI performance on the Southeastern Electric Exchange (SEE) Survey and is on-track to maintain its ranking among other electric utilities.

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

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

	2 nd Quarter	Year-to-Date
Substations with Remote Monitoring	354	354
Total Number of Substations	356	356

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

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

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

Transmission and Distribution	
Lineman Leader	60
Journeyman Lineman	182
Journeyman Lineman-Trainee	28
Helper	28
Groundhand	2
Troubleman	50
T&D Total	350
Electrical	
Elect Leaders-UG	2
Elect Leaders-Net	11
Elect Leaders-Sub	24
Journeyman Elect-UG	10
Journeyman Elect-Net	28
Journeyman Elect-Sub	57
Electrical Total	132
Overall Total	482

PPL Electric Utilities Corporation

***Worst Performing Circuit Definition / Comparison under Previous
and New Circuit Performance Index (CPI) formulas.***

PPL Electric uses an equal weighting of circuit SAIDI and system SAIFI contribution over the previous four quarters to define the worst performing circuits on its system. IEEE Major Event days are excluded. This ranking system was put in place as of the first quarter of 2020, for the following reasons:

- Increased targeting of problem areas versus circuits that may be reasonable performers but are simply long circuits that have been in storms.
- It prioritizes the circuits contributing the most toward system SAIFI.
- It is less biased towards long, rural circuits and more reflective of the customer experience.

Typically, 60 to 70 percent overlap is anticipated between the new and prior methods.

Appendix A

Method Comparison – Circuits Included / Excluded

LINE	FEEDER	On New List	On Old List	Reason
55001		Y	Y	On both lists
20103		Y	Y	On both lists
28101		Y	Y	On both lists
21206		Y	Y	On both lists
18501		Y	Y	On both lists
11504		Y	Y	On both lists
45002		Y	Y	On both lists
56802		Y	Y	On both lists
56501		Y	Y	On both lists
56504		Y	Y	On both lists
52401		Y	Y	On both lists
18502		Y	Y	On both lists
24901		Y	Y	On both lists
25801		Y	Y	On both lists
52402		Y	Y	On both lists
20601		Y	Y	On both lists
11506		Y	Y	On both lists
53601		Y	Y	On both lists
59002		Y	Y	On both lists
45902		Y	Y	On both lists
40201		Y	Y	On both lists
13704		Y	N	On List primarily for high system SAIFI
40602		Y	Y	On both lists
11303		Y	N	On List primarily for high system SAIFI
22905		Y	Y	On both lists
14501		Y	N	On List primarily for high system SAIFI
22401		Y	N	On List primarily for high system SAIFI
24401		Y	N	On List primarily for high system SAIFI
20402		Y	Y	On both lists
63404		Y	N	On List primarily for high system SAIFI
17801		Y	N	On List primarily for high system SAIFI
28602		Y	Y	On both lists
63201		Y	N	On List primarily for high system SAIFI
41602		Y	Y	On both lists
28402		Y	N	On List primarily for high system SAIFI
24902		Y	N	On List primarily for high system SAIFI
46001		Y	Y	On both lists
55002		Y	N	On List primarily for high system SAIFI
27403		Y	Y	On both lists
28102		Y	Y	On both lists
59202		Y	Y	On both lists
50503		Y	N	On List primarily for high system SAIFI
13606		Y	N	On List primarily for high system SAIFI
40603		Y	N	On List primarily for high system SAIFI
12802		Y	N	On List primarily for high system SAIFI
45302		Y	Y	On both lists
26601		Y	N	On List primarily for high system SAIFI
26602		Y	N	On List primarily for high system SAIFI
14801		Y	N	On List primarily for high system SAIFI
57403		Y	N	On List primarily for high system SAIFI
21901		Y	N	On List primarily for high system SAIFI
24602		Y	Y	On both lists
25501		Y	Y	On both lists
43304		Y	N	On List primarily for high system SAIFI
11402		Y	N	On List primarily for high system SAIFI
52403		Y	N	On List primarily for high system SAIFI
12202		Y	N	On List primarily for high system SAIFI
64801		Y	N	On List primarily for high system SAIFI
27501		Y	N	On List primarily for high system SAIFI
29702		Y	Y	On both lists
41902		Y	N	On List primarily for high system SAIFI
45702		Y	N	On List primarily for high system SAIFI
65901		Y	N	On List primarily for high system SAIFI
28303		N	Y	Lower IEEE CMI due to weather normalization
26604		N	Y	Lower IEEE CMI due to weather normalization
26703		N	Y	Lower IEEE CMI due to weather normalization
45402		N	Y	Lower IEEE CMI due to weather normalization
45602		N	Y	Lower IEEE CMI due to weather normalization
28801		N	Y	Lower IEEE CMI due to weather normalization
20403		N	Y	Lower IEEE CMI due to weather normalization
23604		N	Y	Lower IEEE CMI due to weather normalization
22003		N	Y	Lower IEEE CMI due to weather normalization
26704		N	Y	Lower IEEE CMI due to weather normalization
47002		N	Y	Lower IEEE CMI due to weather normalization
66401		N	Y	Lower IEEE CMI due to weather normalization
53803		N	Y	Lower IEEE CMI due to weather normalization
40301		N	Y	Lower IEEE CMI due to weather normalization
27402		N	Y	Lower IEEE CMI due to weather normalization
46504		N	Y	Lower IEEE CMI due to weather normalization
28803		N	Y	Lower IEEE CMI due to weather normalization
53901		N	Y	Lower IEEE CMI due to weather normalization
27603		N	Y	Lower IEEE CMI due to weather normalization
23101		N	Y	Lower IEEE CMI due to weather normalization
26001		N	Y	Lower IEEE CMI due to weather normalization
46702		N	Y	Lower IEEE CMI due to weather normalization
29501		N	Y	Lower IEEE CMI due to weather normalization
28703		N	Y	Lower IEEE CMI due to weather normalization
22601		N	Y	Lower IEEE CMI due to weather normalization
47001		N	Y	Lower IEEE CMI due to weather normalization
42701		N	Y	Lower IEEE CMI due to weather normalization
16505		N	Y	Lower IEEE CMI due to weather normalization
16504		N	Y	Lower IEEE CMI due to weather normalization

PPL Electric Utilities Corporation***Job Descriptions******Transmission and Distribution***

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

Appendix B

Electrical

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

Appendix B

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