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E-FILE

April 30, 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 March 31, 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 March 31, 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 April 30, 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).

If you have any questions regarding this document, please call me or

B. Kathryn Frazier, PPL Electric's Regulatory Affairs Manager at (610) 774-3372.

Very truly yours,

Kimberly A. Klock

Enclosures

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

PPL Electric Utilities Corporation

Quarterly Reliability Report

to the

Pennsylvania Public Utility Commission

April 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 first 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 March 31, 2020.

SAIFI (Benchmark = 0.98; Rolling 12-month Std. = 1.18)	0.79
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	167
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	131
MAIFI	5.4
Average Number of Customers Served[1]	1,430,746
Number of Sustained Customer Interruptions (Trouble Cases)	20,634
Number of Customers Affected[2]	1,126,084
Customer Minutes of Interruptions (CMI)	187,700,258
Number of Customer Momentary Interruptions	7,657,949

During the first quarter, there were no (0) PUC major events, no (0) PUC reportable events, and four (4) 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 first quarter reliability performance was within the PUC standard for all metrics, and within the PUC Benchmark for SAIFI and SAIDI.

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 Q1	114	0.65	74.0
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 is changing 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	20103	658	194	3.4	7.2	1,727	12	1,136,125
2	18501	617	145	4.3	16.5	1,447	50	892,693
3	59002	561	149	3.8	6.7	2,229	73	1,251,564
4	55001	2,034	458	4.4	15.0	1,291	244	2,626,197
5	45002	1,418	418	3.4	12.2	1,948	83	2,763,164
6	18502	726	300	2.4	15.6	1,838	102	1,334,937
7	21206	492	154	3.2	13.8	2,465	24	1,213,303
8	28101	654	202	3.2	28.4	1,671	64	1,093,643
9	40201	1,322	360	3.7	14.4	1,672	109	2,211,212
10	63201	470	113	4.2	9.0	1,095	44	514,932
11	11504	379	109	3.5	2.4	1,328	11	503,641
12	56501	790	214	3.7	15.1	2,413	54	1,906,082
13	47704	733	185	4.0	6.0	1,382	65	1,013,684
14	22401	606	148	4.1	11.1	865	31	524,476
15	45302	912	281	3.2	7.2	1,213	56	1,106,185
16	56802	639	125	5.1	16.7	1,523	81	973,783
17	41401	303	152	2.0	9.3	1,228	44	372,357
18	20601	421	176	2.4	10.6	1,464	43	615,807
19	11506	362	95	3.8	8.0	1,308	41	473,859
20	53601	1,424	272	5.2	8.3	1,099	44	1,565,476
21	28602	962	385	2.5	5.2	1,922	48	1,848,408
22	59202	546	169	3.2	21.1	1,710	86	933,261
23	24901	461	179	2.6	18.0	2,275	56	1,049,746
24	40101	360	73	5.0	10.5	2,130	57	765,907

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
25	25801	409	199	2.1	4.9	1,815	56	743,032
26	45001	399	137	2.9	10.3	1,774	59	707,947
27	43202	1,362	363	3.8	9.3	1,149	69	1,565,313
28	52402	463	201	2.3	8.8	1,665	72	771,470
29	46001	627	306	2.0	3.5	2,342	66	1,467,497
30	56504	275	139	2.0	16.2	1,983	88	545,202
31	40602	314	160	2.0	3.3	2,310	66	724,910
32	54701	522	122	4.3	38.0	1,100	51	574,193
33	64801	402	223	1.8	22.8	1,517	66	609,776
34	55002	586	179	3.3	0.0	747	49	437,731
35	17801	278	72	3.9	5.4	732	39	203,353
36	25501	470	210	2.2	8.9	1,672	53	786,137
37	26601	642	162	4.0	14.3	1,324	41	849,991
38	47707	314	113	2.8	22.9	1,382	48	433,681
39	59302	299	80	3.8	2.7	800	41	239,477
40	44301	603	277	2.2	6.0	2,045	82	1,232,686
41	28102	660	321	2.1	5.6	1,093	62	721,642
42	45602	625	288	2.2	12.9	1,622	54	1,014,080
43	27403	218	161	1.4	3.1	2,412	10	525,476
44	45902	336	210	1.6	8.8	1,333	41	448,048
45	14801	211	149	1.4	27.7	1,903	47	401,991
46	28302	446	160	2.8	19.9	1,026	54	457,228
47	29702	1,148	382	3.0	8.1	830	48	952,875
48	40601	637	293	2.2	4.1	778	31	495,960
49	41902	455	242	1.9	10.7	1,370	67	623,152
50	11303	251	155	1.6	15.2	1,626	52	407,911
51	45801	185	102	1.8	3.6	2,073	56	384,174
52	24502	371	207	1.8	4.8	1,098	30	407,080
53	24602	468	174	2.7	9.2	1,503	75	703,993
54	46301	2,466	1,217	2.0	4.2	1,054	45	2,598,703
55	43401	2,809	767	3.7	22.3	977	47	2,743,978
56	42901	210	92	2.3	3.7	1,220	38	256,008
57	22905	153	119	1.3	7.7	3,423	12	525,031
58	21203	307	187	1.6	6.9	1,225	33	376,586
59	25402	206	114	1.8	8.9	1,790	53	369,160
60	12202	262	171	1.5	4.4	1,290	20	337,607
61	41802	925	280	3.3	11.7	518	32	479,076
62	47002	362	221	1.6	2.9	1,995	65	723,067
63	27501	275	194	1.4	6.2	1,241	28	341,816

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

01 Circuit 20103 -- AVOCA 01-03

Performance Analysis

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

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 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 7, 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 18 outages between April 2019 and March 2020, with the causes breaking down as follows: scheduled outage (6); equipment failure (4); tree related (3); animal contacts (2); 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.

02 Circuit 18501 -- CANADENSIS 85-01

Performance Analysis

The CANADENSIS 85-01 circuit experienced two outages of over 100,000 CMI between April 2019 and March 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.

On May 16, 2019, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,410 customers for up to 280 minutes resulting in 118,347 CMI.

In total, the CANADENSIS 85-01 circuit had 71 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (24); unknown (22); equipment failure (11); scheduled outage (6); animal contacts (5); nothing found (3).

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, additional hot-line clamps will be installed.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, animal guarding will be installed at multiple locations.
- In 2020, additional lightning arrestors will be installed.
- In 2020, full circuit trimming will be performed.

03 Circuit 59002 -- MIFFLINTOWN 90-02

Performance Analysis

The MIFFLINTOWN 90-02 circuit experienced three outages of over 100,000 CMI between April 2019 and March 2020.

On March 4, 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.

On June 12, 2019, during a period of heavy rain, an unidentified issue occurred with an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 2,246 customers for up to 409 minutes resulting in 516,381 CMI.

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.

In total, the MIFFLINTOWN 90-02 circuit had 85 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (24); equipment failure (21); unknown (17); scheduled outage (12); animal contacts (4); nothing found (3); other (2); vehicles (2).

Remedial Actions

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

04 Circuit 55001 -- NEWPORT 50-01

Performance Analysis

The NEWPORT 50-01 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the NEWPORT 50-01 circuit had 244 outages between April 2019 and March 2020, with the causes breaking down as follows: Tree related (112); equipment failure (72); animal contacts (27); vehicles (18); nothing found (8); other (12).

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.
- In 2019, three single-phase reclosers were installed, along with related fusing.
- In 2019, a substation conversion was performed.
- In 2019, protection coordination was evaluated.
- 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, an additional single-phase sectionalizer was installed.
- In 2020, single-phase sectionalizing devices will be installed at three locations.
- In 2020, full circuit trimming will be performed.
- In 2020, a section of single-phase will be resourced.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2020, a section of three-phase will be evaluated for relocation.

05 Circuit 45002 -- LIMESTONE 50-02

Performance Analysis

The LIMESTONE 50-02 circuit experienced two outages of over 100,000 CMI between April 2019 and March 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 73 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (25); equipment failure (17); unknown (11); scheduled outage (10); animal contacts (6); nothing found (2); contact or dig in (1); vehicles (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, an additional single-phase recloser will be installed.
- In 2020, full circuit trimming will be performed.
- 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.

06 Circuit 18502 -- CANADENSIS 85-02

Performance Analysis

The CANADENSIS 85-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 126 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (58); unknown (26); scheduled outage (12); animal contacts (11); equipment failure (10); vehicles (5); nothing found (4).

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, 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, additional animal guarding will be installed.
- In 2021, full circuit trimming will be performed.
- In 2021, a three-phase tie will be constructed to the CANADENSIS 85-01.
- In 2021, a section of three-phase conductor will be extended.
- In 2021, two single-phase ties will be constructed.

07 Circuit 21206 -- EAST CARBONDALE 12-06

Performance Analysis

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

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.

On February 3, 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.

In total, the EAST CARBONDALE 12-06 circuit had 53 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (21); scheduled outage (12); tree related (10); equipment failure (6); animal contacts (2); other (1); vehicles (1).

Remedial Actions

- In 2019, the protection settings for this circuit were reviewed. Several minor remediations were performed.
- In 2019, hotline clamps were replaced at two locations.
- In 2020, a three-phase recloser was replaced.
- In 2020, full circuit trimming will be performed.
- In 2020, multiple porcelain cutouts will be replaced.
- In 2020, hotline clamps will be replaced at three locations.
- In 2020, additional single-phase reclosers will be evaluated.
- In 2020, a section of this circuit will be reconductored.
- In 2021, a section of this circuit will be re-sourced, and additional sectionalizing will be installed.

08 Circuit 28101 -- TWIN LAKES 81-01

Performance Analysis

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

On December 17, 2019, during a period of strong wind, a tree contacted an unknown component causing 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 99 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (33); tree related (28); scheduled outage (13); equipment failure (10); animal contacts (8); nothing found (5); 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 existing reclosers will be replaced.
- In 2020, additional fusing will be evaluated at several locations.
- In 2020, additional single-phase reclosers will be evaluated for this circuit.

09 Circuit 40201 -- BEAR GAP 02-01

Performance Analysis

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

In total, the BEAR GAP 02-01 circuit had 137 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (57); unknown (26); scheduled outage (22); equipment failure (15); animal contacts (10); nothing found (7).

Remedial Actions

- In 2019, additional fusing was installed at eight locations.
- In 2020, three single-phase reclosers will be installed.
- 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.

10 Circuit 63201 -- MORGANTOWN 32-01

Performance Analysis

The MORGANTOWN 32-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On May 28, 2019, a tree contacted an unknown component causing a circuit breaker to trip to lockout. This outage affected 1,061 customers for up to 229 minutes resulting in 226,521 CMI.

In total, the MORGANTOWN 32-01 circuit had 65 outages between April 2019 and March 2020, with the causes breaking down as follows: equipment failure (15); scheduled outage (15); unknown (13); tree related (11); animal contacts (4); contact or dig in (2); nothing found (2); vehicles (2); other (1).

Remedial Actions

- In 2019, a multiphase drone patrol was conducted. As a result, one pole, several crossarms, and several insulators will be replaced in 2020.
- In 2019, a Proactive Circuit Analysis was performed.
- In 2019, two additional sectionalizing devices were installed.
- In 2020, nine poles were replaced.
- In 2020, three additional sectionalizing devices will be installed

11 Circuit 11504 -- FREEMANSBURG 15-04

Performance Analysis

The FREEMANSBURG 15-04 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 19 outages between April 2019 and March 2020, with the causes breaking down as follows: scheduled outage (8); equipment failure (7); tree related (2); unknown (1); vehicles (1).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2019, ten locations received animal guarding.
- In 2020, additional animal guarding will be installed.
- In 2021, a portion of this circuit will be transferred, reducing load and circuit length.

12 Circuit 56501 -- ROCKVILLE 65-01

Performance Analysis

The ROCKVILLE 65-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 87 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (32); tree related (27); equipment failure (11); scheduled outage (11); animal contacts (5); 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, additional animal guarding was installed at six locations with 12 more locations scheduled.
- In 2020, two new fuses were installed with seven 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, two new Smart Grid devices will be evaluated.
- In 2020, three-phase reconductoring will be evaluated for this circuit.
- In 2020, a new substation will be evaluated.

13 Circuit 47704 -- BLOOMSBURG 77-04

Performance Analysis

The BLOOMSBURG 77-04 circuit experienced two outages of over 100,000 CMI between April 2019 and March 2020.

On May 31, 2019, during a period of heavy rain, a tree contacted an overhead conductor causing an interruption. This outage affected 403 customers for up to 839 minutes resulting in 337,573 CMI.

On July 20, 2019, a tree contacted an overhead conductor causing an interruption. This outage affected 271 customers for up to 498 minutes resulting in 134,958 CMI.

In total, the BLOOMSBURG 77-04 circuit had 81 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (32); scheduled outage (15); equipment failure (12); unknown (9); animal contacts (8); nothing found (3); contact or dig in (1); other (1).

Remedial Actions

- In 2020, full circuit trimming will be performed.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2021, two additional single-phase reclosers will be installed.

14 Circuit 22401 -- MORGAN 24-01

Performance Analysis

The MORGAN 24-01 circuit experienced two outages of over 100,000 CMI between April 2019 and March 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.

On May 28, 2019, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 728 customers for up to 2,525 minutes resulting in 210,946 CMI.

In total, the MORGAN 24-01 circuit had 39 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (10); unknown (10); equipment failure (9); animal contacts (4); scheduled outage (3); other (2); contact or dig in (1).

Remedial Actions

- In 2019, additional animal guarding was installed.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, fusing will be installed at three locations.
- In 2020, an existing recloser will be upgraded.

15 Circuit 45302 -- WEST BERWICK 53-02

Performance Analysis

The WEST BERWICK 53-02 circuit experienced two outages of over 100,000 CMI between April 2019 and March 2020.

On May 7, 2019, a tree contacted an overhead conductor causing an interruption. This outage affected 1,211 customers for up to 352 minutes resulting in 161,433 CMI.

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 73 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (27); equipment failure (15); scheduled outage (14); animal contacts (10); unknown (5); nothing found (2).

Remedial Actions

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

16 Circuit 56802 -- BENVENUE 68-02

Performance Analysis

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

In total, the BENVENUE 68-02 circuit had 96 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (41); unknown (25); equipment failure (13); scheduled outage (10); nothing found (4); animal contacts (3).

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, additional single-phase fusing was installed at three locations in 2020, with three more to be completed.
- In 2020, four sectionalizing devices were installed.
- In 2020, a section of single-phase line will be re-sourced.
- In 2020, seven additional single-phase recloser will be installed.

17 Circuit 41401 -- HUMMELS WHARF 14-01

Performance Analysis

The HUMMELS WHARF 14-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On June 26, 2019, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 1,224 customers for up to 536 minutes resulting in 390,324 CMI.

In total, the HUMMELS WHARF 14-01 circuit had 75 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (22); tree related (20); equipment failure (13); scheduled outage (13); nothing found (2); other (2); vehicles (2); animal contacts (1).

Remedial Actions

- In 2019, a Proactive Circuit Review was performed. Several minor remediations were performed in 2020 as a result.
- In 2020, an existing device will be evaluated for relocation.
- In 2020, a section of difficult-to-access single-phase will be relocated.
- In 2020, full circuit trimming will be performed.

18 Circuit 20601 -- GREENWOOD 06-01

Performance Analysis

The GREENWOOD 06-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 69 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (23); unknown (23); equipment failure (9); scheduled outage (8); animal contacts (5); 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 additional single-phase recloser will be installed.
- In 2020, additional fusing will be installed at six locations.
- In 2020, a section of difficult-to-access conductor will be evaluated for relocation, aerial cable, or undergrounding.
- In 2020, an existing recloser will be evaluated for replacement.

19 Circuit 11506 -- FREEMANSBURG 15-06

Performance Analysis

The FREEMANSBURG 15-06 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 67 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (24); tree related (14); equipment failure (11); unknown (10); animal contacts (6); nothing found (1); vehicles (1).

Remedial Actions

- In 2020, a section of three-phase conductor was extended.
- 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.

20 Circuit 53601 -- DALMATIA 36-01

Performance Analysis

The DALMATIA 36-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 April 2019 and March 2020, with the causes breaking down as follows: tree related (21); scheduled outage (18); unknown (10); animal contacts (5); nothing found (2); equipment failure (1).

Remedial Actions

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

21 Circuit 28602 -- BLYTHEBURN 86-02

Performance Analysis

The BLYTHEBURN 86-02 circuit experienced two outages of over 100,000 CMI between April 2019 and March 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 21, 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 April 2019 and March 2020, with the causes breaking down as follows: tree related (23); scheduled outage (15); equipment failure (5); unknown (5); animal contacts (3); nothing found (3); other (2); 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 minor remediations will be performed.
- 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, several span will be reconductored.
- In 2020, undergrounding will be evaluated for a section of heavily wooded conductor.
- In 2020, additional single-phase reclosers will be evaluated for this circuit.
- In 2020, hot spot trimming will be evaluated for a section of heavily wooded conductor.
- In 2021, a three-phase section will be reconductored.

22 Circuit 59202 -- THOMPSONTOWN 92-02

Performance Analysis

The THOMPSONTOWN 92-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On April 27, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 922 customers for up to 1,587 minutes resulting in 171,928 CMI.

In total, the THOMPSONTOWN 92-02 circuit had 121 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (44); scheduled outage (28); unknown (24); equipment failure (16); vehicles (5); animal contacts (3); 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, an additional single-phase sectionalizing device was installed.
- In 2019, fusing was installed at two locations.
- In 2020, four single-phase sectionalizing devices will be installed.
- In 2020, a section of inaccessible conductor will be relocated.
- In 2020, additional fusing was installed, with more planned for later in the year.
- In 2020, a three-phase protective device will be upgraded to a Smart Grid device.
- In 2020, a section of single-phase will be evaluated for reconductoring.
- In 2021, full circuit trimming will be performed.

23 Circuit 24901 -- WHITE HAVEN 49-01

Performance Analysis

The WHITE HAVEN 49-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 80 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (25); tree related (18); equipment failure (15); scheduled outage (9); animal contacts (8); nothing found (2); contact or dig in (1); other (1); vehicles (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 will be performed.
- In 2020, two three-phase extensions will be constructed to split up single-phase customers. These projects will include additional fusing and single-phase reclosers.
- In 2020, a Proactive Circuit Analysis will be performed.

24 Circuit 40101 -- HUNTER 01-01

Performance Analysis

The HUNTER 01-01 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the HUNTER 01-01 circuit had 117 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (46); tree related (25); unknown (25); animal contacts (10); equipment failure (9); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2019, an additional single-phase recloser was installed.
- In 2019, additional fusing was installed at four locations.
- In 2019, several porcelain cutouts were replaced.
- In 2019 a drone patrol was performed. As a result, several cross arms were replaced.
- In 2020, an additional single-phase recloser was installed.
- In 2020, full circuit trimming was performed.
- In 2020, aerial cable will be installed in a heavily wooded area.
- In 2020, five additional locations will receive fusing.
- In 2020, additional Smart Grid devices will be evaluated.
- In 2021, a section of three-phase will be reconductored.

25 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 56 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (25); equipment failure (12); unknown (8); animal contacts (5); nothing found (2); scheduled outage (2); vehicles (2).

Remedial Actions

- In 2020, additional fusing will be evaluated.
- In 2020, additional single-phase reclosers will be evaluated for 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.

26 Circuit 45001 -- LIMESTONE 50-01

Performance Analysis

The LIMESTONE 50-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On July 16, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 436 customers for up to 24 minutes resulting in 151,610 CMI.

In total, the LIMESTONE 50-01 circuit had 73 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (24); unknown (24); animal contacts (10); equipment failure (6); nothing found (3); scheduled outage (3); other (2); vehicles (1).

Remedial Actions

- In 2019, additional fusing was installed.
- In 2020, full circuit tree trimming will be performed.
- In 2020, multiple poles will be evaluated for replacement.
- In 2020, additional single-phase fusing will be installed.

27 Circuit 43202 -- MILLVILLE 32-02

Performance Analysis

The MILLVILLE 32-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On April 20, 2019, during a period of strong wind, a tree contacted a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,148 customers for up to 407 minutes resulting in 107,392 CMI.

In total, the MILLVILLE 32-02 circuit had 87 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (40); unknown (15); scheduled outage (13); equipment failure (9); nothing found (5); animal contacts (4); vehicles (1).

Remedial Actions

- In 2019, two single-phase reclosers were installed.
- In 2019, additional fusing was added at multiple locations.
- In 2019, multiple porcelain cutouts were replaced.
- In 2020, a section of difficult-to-access three-phase will be relocated.
- In 2020, additional single-phase reclosers will be installed.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2021, a section of conductor in a heavily wooded area will be relocated to underground.
- In 2021, two additional single-phase reclosers will be installed.

28 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

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

In total, the GREEN PARK 24-02 circuit had 90 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (36); unknown (18); equipment failure (14); scheduled outage (14); animal contacts (4); contact or dig in (2); other (2).

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, three sections of conductor were relocated, with three more to be relocated in 2020.
- In 2020, a second transmission source to the distribution substation will be constructed.
- In 2020, additional single-phase sectionalizing will be installed at two locations.

- In 2020, two sections of difficult-to-access conductor will be relocated.
- In 2020, multiple additional single-phase sectionalizing devices will be installed.
- In 2020, a Proactive Circuit Analysis will be performed.
- In 2021, one section of single-phase will be relocated to underground.
- In 2021 and 2022, two sections of single-phase will be reconductored.

29 Circuit 46001 -- BERWICK 60-01

Performance Analysis

The BERWICK 60-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 April 2019 and March 2020, with the causes breaking down as follows: tree related (26); equipment failure (12); animal contacts (7); nothing found (7); scheduled outage (4); unknown (4); vehicles (2).

Remedial Actions

- In 2019, multiple porcelain cutouts were replaced.
- In 2020, a section of single-phase conductor will be evaluated for re-sourcing.
- In 2021, a section of difficult-to-access single phase will be relocated.
- In 2021, an additional single-phase recloser will be installed.

30 Circuit 56504 -- ROCKVILLE 65-04

Performance Analysis

The ROCKVILLE 65-04 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 112 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (38); unknown (29); animal contacts (14); scheduled outage (14); equipment failure (11); nothing found (4); contact or dig in (1); other (1).

Remedial Actions

- In 2019, multiple single-phase sectionalizing devices were installed.
- In 2020, eight fuses will be installed

- In 2020, multiple single-phase sectionalizing devices will be installed.
- In 2020, multiple animal guards will be installed.

31 Circuit 40602 -- PINE GROVE 06-02

Performance Analysis

The PINE GROVE 06-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

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 78 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (23); scheduled outage (15); equipment failure (13); animal contacts (12); unknown (5); nothing found (4); vehicles (4); other (2).

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, a section of single-phase line will be reconductored to three-phase, and the protection scheme will be upgraded.
- In 2020, an additional single-phase recloser will be installed.
- In 2021, full circuit trimming will be performed.

32 Circuit 54701 -- NEW BLOOMFIELD 47-01

Performance Analysis

The NEW BLOOMFIELD 47-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On April 27, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,091 customers for up to 448 minutes resulting in 141,099 CMI.

In total, the NEW BLOOMFIELD 47-01 circuit had 93 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (45); tree related (21); equipment failure (10); scheduled outage (7); animal contacts (4); vehicles (4); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2019, a protection coordination study was conducted, as a result several changes will be applied.
- In 2020, full circuit trimming was performed.
- In 2020, six single-phase sectionalizing devices will be installed.
- In 2020, a drone patrol and Proactive Circuit Analysis will be performed.
- In 2021, a new Smart Grid device will be installed.

33 Circuit 64801 -- MOUNT NEBO 48-01

Performance Analysis

The MOUNT NEBO 48-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On June 28, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 769 customers for up to 601 minutes resulting in 279,526 CMI.

In total, the MOUNT NEBO 48-01 circuit had 83 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (26); unknown (24); equipment failure (11); scheduled outage (10); animal contacts (7); vehicles (3); nothing found (1); other (1).

Remedial Actions

- 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 2021, several locations with dissimilar conductor will be remediated.

34 Circuit 55002 -- NEWPORT 50-02

Performance Analysis

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

On November 28, 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.

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.

In total, the NEWPORT 50-02 circuit had 48 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (25); equipment failure (11); scheduled outage (5); animal contacts (4); contact or dig in (1); nothing found (1); vehicles (1).

Remedial Actions

- 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 evaluated for reconductoring.
- In 2020, a section of single-phase will be evaluated for relocation.
- In 2020, an additional sectionalizing device will be evaluated.

35 Circuit 17801 -- GILBERT 78-01

Performance Analysis

The GILBERT 78-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 57 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (17); tree related (17); equipment failure (11); unknown (4); animal contacts (3); nothing found (2); vehicles (2); other (1).

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 with more to be replaced.
- In 2020, additional animal guarding was installed with more to be installed later this year.

36 Circuit 25501 -- MADISONVILLE 55-01

Performance Analysis

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

In total, the MADISONVILLE 55-01 circuit had 71 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (22); unknown (15); scheduled outage (14); equipment failure (12); vehicles (4); animal contacts (2); 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, full circuit trimming will be performed.
- In 2020, two new single-phase reclosers will be installed and several will be evaluated.
- In 2020, multiple capacitor banks will be upgraded.
- In 2020, additional animal guarding will be installed.
- In 2020, a tie will be evaluated for this circuit.

37 Circuit 26601 -- BROOKSIDE 66-01

Performance Analysis

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

In total, the BROOKSIDE 66-01 circuit had 54 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (15); equipment failure (14); unknown (14); scheduled outage (4); animal contacts (2); nothing found (2); vehicles (2); other (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.

38 Circuit 47707 -- BLOOMSBURG 77-07

Performance Analysis

The BLOOMSBURG 77-07 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the BLOOMSBURG 77-07 circuit had 89 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (32); scheduled outage (18); equipment failure (16); tree related (15); nothing found (6); animal contacts (2).

Remedial Actions

- In 2019, the tie capability was improved on this circuit.
- In 2020, a Proactive Circuit Review will be performed.
- In 2022, a new line and terminal will take some of the load from this circuit.
- In 2022, the circuit will be reconfigured, and several sections of difficult-to-access conductor will be removed.

39 Circuit 59302 -- MC ALISTERVILLE 93-02

Performance Analysis

The MC ALISTERVILLE 93-01 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the MC ALISTERVILLE 93-01 circuit had 49 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (21); equipment failure (9); scheduled outage (9); unknown (4); animal contacts (2); vehicles (2); nothing found (1); other (1).

Remedial Actions

- In 2020, additional sectionalizing devices will be evaluated.
- In 2020, full circuit trimming will be performed.
- In 2021, two additional single-phase reclosers will be installed.

40 Circuit 44301 -- BEAVERTOWN 43-01

Performance Analysis

The BEAVERTOWN 43-01 circuit experienced two outages of over 100,000 CMI between April 2019 and March 2020.

On May 24, 2019, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 470 customers for up to 321 minutes resulting in 143,535 CMI.

On May 4, 2019, a tree contacted an overhead transmission component causing a circuit breaker to trip to lockout. This outage affected 2,021 customers for up to 67 minutes resulting in 135,407 CMI.

In total, the BEAVERTOWN 43-01 circuit had 112 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (31); scheduled outage (28); equipment failure (17); unknown (17); animal contacts (10); nothing found (6); vehicles (2); other (1).

Remedial Actions

- In 2019, a section of difficult-to-access single-phase was relocated.
- In 2019, additional fusing was installed on this circuit.
- In 2019, 40 poles were replaced.
- In 2021, two sections of three-phase conductor will be relocated.
- In 2021, two additional Smart Grid devices will be installed.
- In 2021, full circuit trimming will be performed.

41 Circuit 28102 -- TWIN LAKES 81-02

Performance Analysis

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

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.

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.

In total, the TWIN LAKES 81-02 circuit had 76 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (27); scheduled outage (20); animal contacts (12); equipment failure (6); unknown (6); nothing found (3); other (2).

Remedial Actions

- In 2020, full circuit trimming will be performed.
- In 2020, additional fusing will be evaluated for five locations.
- In 2020, an additional single-phase recloser will be evaluated.

42 Circuit 45602 -- WOOLRICH 56-02

Performance Analysis

The WOOLRICH 56-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On February 27, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 362 customers for up to 302 minutes resulting in 109,324 CMI.

In total, the WOOLRICH 56-02 circuit had 73 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (27); unknown (25); equipment failure (7); animal contacts (6); scheduled outage (5); nothing found (3).

Remedial Actions

- In 2019, an additional Smart Grid device was installed.
- In 2019, additional animal guarding was installed.
- In 2019, a Proactive Circuit Analysis was performed. Several minor remediations will be performed in 2020 as a result.
- In 2020, a tie to the WOOLRICH 56-01 will be evaluated.
- In 2020, an additional single-phase sectionalizing device will be installed.
- In 2020, additional animal guarding will be installed.
- In 2020, additional fusing will be installed.
- In 2021, an additional single-phase recloser will be installed.

43 Circuit 27403 -- KEYSER AVENUE 74-03

Performance Analysis

The KEYSER AVENUE 74-03 circuit experienced two outages of over 100,000 CMI between April 2019 and March 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 16 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (5); animal contacts (4); equipment failure (2); tree related (2); unknown (2); vehicles (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2020, an existing recloser was converted to triple-single operation.
- In 2020, additional sectionalizing will be evaluated for a heavily wooded section.
- In 2020, voltage control will be upgraded on this circuit.

44 Circuit 45902 -- AUBURN 59-02

Performance Analysis

The AUBURN 59-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 79 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (28); tree related (20); unknown (13); equipment failure (7); nothing found (5); animal contacts (4); vehicles (2).

Remedial Actions

- In 2019, a section of three-phase was reconductored.
- In 2019, several hazard trees were removed.
- In 2020, additional fusing will be installed at four locations.
- 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.

45 Circuit 14801 -- TREICHLERS 48-01

Performance Analysis

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

On July 22, 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 86 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (32); animal contacts (15); equipment failure (14); tree related (12); scheduled outage (8); 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 2020, additional fusing was installed at two locations.
- In 2020, two additional single-phase reclosers will be installed.
- In 2020, additional fusing will be evaluated for six locations.
- In 2020, existing connections with dissimilar metals will be replaced.
- In 2020, two sections of difficult-to-access conductor will be evaluated for relocation.

46 Circuit 28302 -- NEWFOUNDLAND 83-02

Performance Analysis

The NEWFOUNDLAND 83-02 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the NEWFOUNDLAND 83-02 circuit had 82 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (26); tree related (19); equipment failure (12); scheduled outage (10); animal contacts (8); vehicles (3); other (2); Improper Operation (1); nothing found (1).

Remedial Actions

- In 2019, additional fusing was installed.
- In 2020, several cross arms were replaced.
- In 2020, full circuit trimming will be performed.
- In 2020, two additional sectionalizing devices will be installed.
- In 2020, additional fusing will be installed.
- In 2020, two additional reclosers will be evaluated for this circuit.
- In 2021, a section of conductor will be evaluated for relocation.

47 Circuit 29702 -- ANGELS 91-02

Performance Analysis

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

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.

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.

In total, the ANGELS 91-02 circuit had 54 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (25); unknown (12); equipment failure (7); animal contacts (5); scheduled outage (5).

Remedial Actions

- In 2019, multiple cross arms were replaced.
- In 2019, additional animal guarding was installed at multiple locations.
- In 2019, multiple transformers were replaced on this circuit.
- In 2019, several poles and cross arms were 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, a single-phase recloser will be installed.
- In 2020, an existing recloser will be replaced.
- In 2021, full circuit trimming will be performed.

48 Circuit 40601 -- PINE GROVE 06-01

Performance Analysis

The PINE GROVE 06-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On May 13, 2019, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 642 customers for up to 497 minutes resulting in 288,674 CMI.

In total, the PINE GROVE 06-01 circuit had 54 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (21); scheduled outage (20); equipment failure (5); nothing found (5); unknown (2); animal contacts (1).

Remedial Actions

- In 2019, an existing recloser was replaced.
- In 2020, a section of difficult-to-access conductor will be relocated.
- In 2020, a new three-phase recloser will be installed.
- In 2020, an addition single-phase recloser will be evaluated.
- In 2020, a section of difficult-to-access conductor will be evaluated for relocation.
- In 2021, an additional single-phase recloser will be installed.
- In 2021, a section of this circuit will be transferred to an adjacent circuit.

49 Circuit 41902 -- REED 19-02

Performance Analysis

The REED 19-02 circuit experienced two outages of over 100,000 CMI between April 2019 and March 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 189 customers for up to 637 minutes resulting in 120,355 CMI.

On September 8, 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.

In total, the REED 19-02 circuit had 77 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (17); unknown (15); animal contacts (12); equipment failure (12); scheduled outage (11); nothing found (7); vehicles (2); other (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 will be replaced.
- In 2020, a section of single-phase conductor will be upgraded to three-phase.
- In 2021, full circuit trimming will be performed.

50 Circuit 11303 -- EMMAUS 13-03

Performance Analysis

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

On July 22, 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 73 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (22); animal contacts (15); unknown (15); scheduled outage (10); equipment failure (8); nothing found (2); other (1).

Remedial Actions

- In 2019, additional animal guarding was installed at 10 locations.
- In 2020, additional fusing will be installed at 10 locations.
- In 2020, single-phase reclosers will be evaluated for seven locations.
- In 2020, additional single-phase ties will be evaluated for this circuit.

51 Circuit 45801 -- HEGINS 58-01

Performance Analysis

The HEGINS 58-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On April 27, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 342 customers for up to 43 minutes resulting in 117,209 CMI.

In total, the HEGINS 58-01 circuit had 74 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (24); equipment failure (20); scheduled outage (11); unknown (8); animal contacts (6); nothing found (5).

Remedial Actions

- In 2020, several poles will be replaced.
- In 2020, a section of difficult-to-access conductor will be evaluated for relocation.
- In 2021, a section of this circuit will be transferred to an adjacent circuit.
- In 2021, three additional single-phase reclosers will be installed.
- In 2021, fusing will be installed at six locations.
- In 2021, full circuit trimming will be performed.

52 Circuit 24502 -- GOULDSBORO 45-02

Performance Analysis

The GOULDSBORO 45-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On December 5, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 557 customers for up to 679 minutes resulting in 173,412 CMI.

In total, the GOULDSBORO 45-02 circuit had 49 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (15); tree related (13); scheduled outage (8); equipment failure (6); animal contacts (2); nothing found (2); vehicles (2); other (1).

Remedial Actions

- In 2019 and 2020 multiple poles and arms were replaced on this circuit.
- In 2020, additional fusing will be installed.
- In 2020, additional single-phase reclosers will be evaluated for this circuit.
- In 2020, an existing sectionalizing device will be replaced.

53 Circuit 24602 -- VARDEN 46-02

Performance Analysis

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

In total, the VARDEN 46-02 circuit had 81 outages between April 2019 and March 2020, with the causes breaking down as follows: equipment failure (23); tree related (23); animal contacts (11); scheduled outage (10); unknown (9); nothing found (2); other (2); vehicles (1).

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, additional single-phase reclosers will be evaluated.
- In 2020, relocating a section of difficult-to-access conductor will be evaluated.
- In 2021, several sections of line will be reconductored.

54 Circuit 46301 -- ROHRSBURG 63-01

Performance Analysis

The ROHRSBURG 63-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On April 14, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,052 customers for up to 4,937 minutes resulting in 2,242,417 CMI.

In total, the ROHRSBURG 63-01 circuit had 55 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (25); equipment failure (9); unknown (8); scheduled outage (7); animal contacts (3); nothing found (3).

Remedial Actions

- In 2019, multiple porcelain cutouts were replaced.
- In 2019, full circuit trimming was performed.
- In 2019, multiple poles were replaced.

- In 2020, two additional single-phase reclosers will be installed.

55 Circuit 43401 -- BENTON 34-01

Performance Analysis

The BENTON 34-01 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the BENTON 34-01 circuit had 91 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (32); unknown (30); scheduled outage (12); equipment failure (8); animal contacts (3); nothing found (3); vehicles (2); other (1).

Remedial Actions

- In 2019, an additional single-phase recloser was installed.
- In 2019, an additional Smart Grid device was installed.
- In 2019, a Proactive Circuit Analysis was performed. As a result, several minor remediations will be performed.
- In 2020, additional single-phase fusing will be installed.
- In 2020, full circuit trimming will be performed.
- In 2021, two additional single-phase reclosers will be installed.

56 Circuit 42901 -- MIDDLEBURG 29-01

Performance Analysis

The MIDDLEBURG 29-01 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On April 27, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 902 customers for up to 525 minutes resulting in 134,826 CMI.

In total, the MIDDLEBURG 29-01 circuit had 49 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (14); equipment failure (13); animal contacts (8); scheduled outage (6); unknown (6); other (1); vehicles (1).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2020, two additional single-phase reclosers will be installed.
- In 2022, a section of difficult-to-access conductor will be relocated.

57 Circuit 22905 -- HARWOOD 29-05

Performance Analysis

The HARWOOD 29-05 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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. The HARWOOD 29-05 was carrying another circuit at the time and is historically a strong performer.

In total, the HARWOOD 29-05 circuit had 32 outages between April 2019 and March 2020, with the causes breaking down as follows: unknown (16); equipment failure (8); scheduled outage (3); animal contacts (1); contact or dig in (1); nothing found (1); other (1); tree related (1).

Remedial Actions

- In 2020, a section of this circuit will be transferred to an adjacent circuit.

58 Circuit 21203 -- EAST CARBONDALE 12-03

Performance Analysis

The EAST CARBONDALE 12-03 circuit experienced one outage of over 100,000 CMI between April 2019 and March 2020.

On October 23, 2019, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 169 customers for up to 598 minutes resulting in 100,960 CMI.

In total, the EAST CARBONDALE 12-03 circuit had 60 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (16); unknown (13); equipment failure (11); tree related (9); animal contacts (6); nothing found (3); contact or dig in (1); other (1).

Remedial Actions

- In 2020, a new three-phase tie will be constructed.
- In 2020, the protection settings for this circuit were reviewed and optimized.
- In 2020, a single-phase sectionalizer will be installed.
- In 2020, additional single-phase reclosers will be installed.
- In 2020, a drone patrol was conducted. As a result, several remediations will be completed in 2020.
- In 2020, multiple porcelain cutouts will be replaced.

59 Circuit 25402 -- LAKE HARMONY 54-02

Performance Analysis

The LAKE HARMONY 54-02 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the LAKE HARMONY 54-02 circuit had 65 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (18); equipment failure (12); scheduled outage (12); unknown (9); animal contacts (8); vehicles (4); nothing found (2).

Remedial Actions

- In 2019, an additional three-phase tie line was constructed.
- In 2020, a drone patrol was performed with several minor items identified for remediation in 2020.
- In 2021, several additional single-phase reclosers will be installed.

60 Circuit 12202 -- FOGELSVILLE 22-02

Performance Analysis

The FOGELSVILLE 22-02 circuit experienced one outage of over 100,000 CMI between April 2019 and March 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 April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (8); equipment failure (4); nothing found (4); tree related (4); unknown (4); animal contacts (3); Improper Operation (1); vehicles (1).

Remedial Actions

- In 2019, a section of underground cable was replaced.
- In 2020, additional fusing will be installed at five locations.
- In 2020, additional animal guarding will be installed at multiple locations.
- In 2020, a single-phase tie will be evaluated for this circuit.
- In 2021, an additional single-phase recloser will be installed.
- In 2021, additional fusing will be installed.

61 Circuit 41802 -- GOWEN CITY 18-02

Performance Analysis

The GOWEN CITY 18-02 circuit experienced two outages of over 100,000 CMI between April 2019 and March 2020.

On January 12, 2020, a tree contacted an overhead switch causing an interruption. This outage affected 523 customers for up to 400 minutes resulting in 189,733 CMI.

On August 19, 2019, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 520 customers for up to 539 minutes resulting in 273,638 CMI.

In total, the GOWEN CITY 18-02 circuit had 48 outages between April 2019 and March 2020, with the causes breaking down as follows: tree related (18); unknown (16); scheduled outage (7); animal contacts (4); nothing found (2); equipment failure (1).

Remedial Actions

- In 2019, hazard tree removal was performed.
- In 2020, a section of difficult-to-access conductor will be relocated or reconductored.
- In 2020, an additional single-phase recloser will be installed.
- In 2020, additional fusing will be installed and more will be evaluated.
- In 2020, several poles will be replaced.
- In 2020, a section of conductor will be evaluated for re-sourcing.
- In 2022, a substation conversion will be performed.

62 Circuit 47002 -- HUGHESVILLE 70-02

Performance Analysis

The HUGHESVILLE 70-02 circuit experienced no outages of over 100,000 CMI between April 2019 and March 2020.

In total, the HUGHESVILLE 70-02 circuit had 112 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (42); tree related (33); equipment failure (14); unknown (12); animal contacts (4); nothing found (4); vehicles (2); other (1).

Remedial Actions

- In 2019, additional animal guarding was installed.
- In 2019, multiple porcelain cutouts were replaced.
- In 2020, a single-phase recloser will be installed.

63 Circuit 27501 -- WEISSPORT 75-01

Performance Analysis

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

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.

On July 29, 2019, an equipment failure occurred on causing a recloser to trip to lockout. This outage affected 673 customers for up to 163 minutes resulting in 100,753 CMI.

In total, the WEISSPORT 75-01 circuit had 48 outages between April 2019 and March 2020, with the causes breaking down as follows: Scheduled outage (13); tree related (9); unknown (9); equipment failure (8); animal contacts (6); nothing found (1); 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 this circuit will be evaluated for reconductoring.
- In 2020, a section of conductor will be evaluated for upgrading and extension.

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	3,658	17.7%	49,478	4.4%	3,111,711	1.7%
Contact / Dig-In	157	0.8%	9,895	0.9%	671,318	0.4%
Directed by Non-PPL Authority	87	0.4%	13,901	1.2%	1,178,704	0.6%
Equipment Failures	5,635	27.3%	300,131	26.7%	29,512,843	15.7%
Improper Design	-	0.0%	-	0.0%	-	0.0%
Improper Installation	3	0.0%	692	0.1%	37,261	0.0%
Improper Operation	19	0.1%	8,589	0.8%	162,452	0.1%
Nothing Found	1,018	4.9%	57,382	5.1%	4,622,440	2.5%
Other Controllable	89	0.4%	8,924	0.8%	445,822	0.2%
Other Non Control	219	1.1%	7,347	0.7%	800,436	0.4%
Other Public	45	0.2%	10,838	1.0%	836,979	0.4%
Tree Related	8,985	43.5%	564,648	50.1%	136,798,514	72.9%
Unknown	-	0.0%	-	0.0%	-	0.0%
Vehicles	719	3.5%	94,259	8.4%	9,521,777	5.1%
Total	**20,634**	**100.0%**	**1,126,084**	**100.0%**	**187,700,258**	**100.0%**

Analysis of causes contributing to the majority of service interruptions:

Weather Conditions: PPL Electric records weather conditions, such as wind or lightning, as contributing factors to service interruptions, but does not code them as direct interruption causes. Therefore, some fluctuations in cause categories, especially tree- and equipment-related causes, are attributable to weather variations. For the current reporting period, weather was considered a significant contributing cause in 51% of cases, 61% of customer interruptions, and 80% 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, 87% of the customer interruptions and 93% 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 75% 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.

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 39% of the cases of trouble, 44% of the customer interruptions and 54% of the customer minutes attributed to equipment failure were weather-related and, as such, are not considered to be strong indicators of equipment condition or performance.

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

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

Inspection & Maintenance Goals/Objectives	Annual Budget	1st Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of structures)	509	125	125	125	125
Transmission arm replacements (# of arms)	24	3	3	3	3
Transmission air break switch inspections (# of switches)	2	1	1	1	1
Transmission surge arrester installations (# of sets)	1,500	0	0	0	0
Transmission structure inspections (# of activities)	18,241	4,445	4,445	4,445	4,445
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	185	381	185	381
Transmission reclearing (# of miles) 69 kV	1651	222	342	222	342
Transmission reclearing (# of miles) 138 kV	57	8	30	8	30
Transmission danger tree removals-Bulk Power (# of trees)	N/A				
Substation					
Substation batteries (# of activities)	1058	855	836	855	836
Circuit breakers (# of activities)	99	7	20	7	20
Substation inspections (# of activities)	2283	826	846	826	846
Transformer maintenance (# of activities)	1378	96	102	96	102

Inspection & Maintenance Goals/Objectives	Annual Budget	1st Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	1238	155	520	155	520
C-truss distribution poles (# of poles)	3,888	0	369	0	369
Capacitor (MVAR added)	1.5	0	0	0	0
OCR Replacements (# of)	0	0	0	0	0
Distribution pole inspections (# of poles)	69,900	7,071	7,824	7,071	7,824
Distribution line inspections (miles)[3]	3,288	863	863	863	863
Group re-lamping (# of lamps)	24,100	1,017	1,017	1,017	1,017
Test sections of underground distribution cable	N/A		199		199
Distribution tree trimming (# of miles)	5,261	1,153	1,808	1,153	1,808
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)	326	82	109	82	109
LTN vault inspections (# of)	361	90	52	90	52
LTN network protector overhauls (# of)	84	21	13	21	13
LTN reverse power trip testing (# of)	28	7	5	7	5

[3] In Q3, line inspections switched to a drone program and the units were changed from hours to miles.

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

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

Activity		1st Quarter		Year-to-date	
	2020 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
Provide Electric Service	5,927	1,343	1,638	1,343	1,638
Vegetation Management	36,213	7,906	10,376	7,906	10,376
Customer Response	61,834	12,519	14,709	12,519	14,709
Reliability Maintenance	33,865	7,777	6,490	7,777	6,490
System Upgrade	7,235	3,277	3,107	3,277	3,107
Customer Service/Accounts	113,140	26,311	22,056	26,311	22,056
Others	38,045	8,985	9,920	8,985	9,920
Total O&M Expenses	**296,258**	**68,118**	**68,297**	**68,118**	**68,297**

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

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

Activity		1st Quarter		Year-to-date	
	2020 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
New Service/Revenue	95,015	22,913	24,161	22,913	24,161
System Upgrade	337,320	84,175	78,616	84,175	78,616
Reliability & Maintenance	567,236	109,312	129,658	109,312	129,658
Customer Response	26,857	5,109	4,160	5,109	4,160
Other	22,667	7,572	(2,529)	7,572	(2,529)
Total	**1,049,095**	**229,082**	**234,066**	**229,082**	**234,066**

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 first quarter of 2020, 230 corrective work orders were created with the following breakdown by priority.

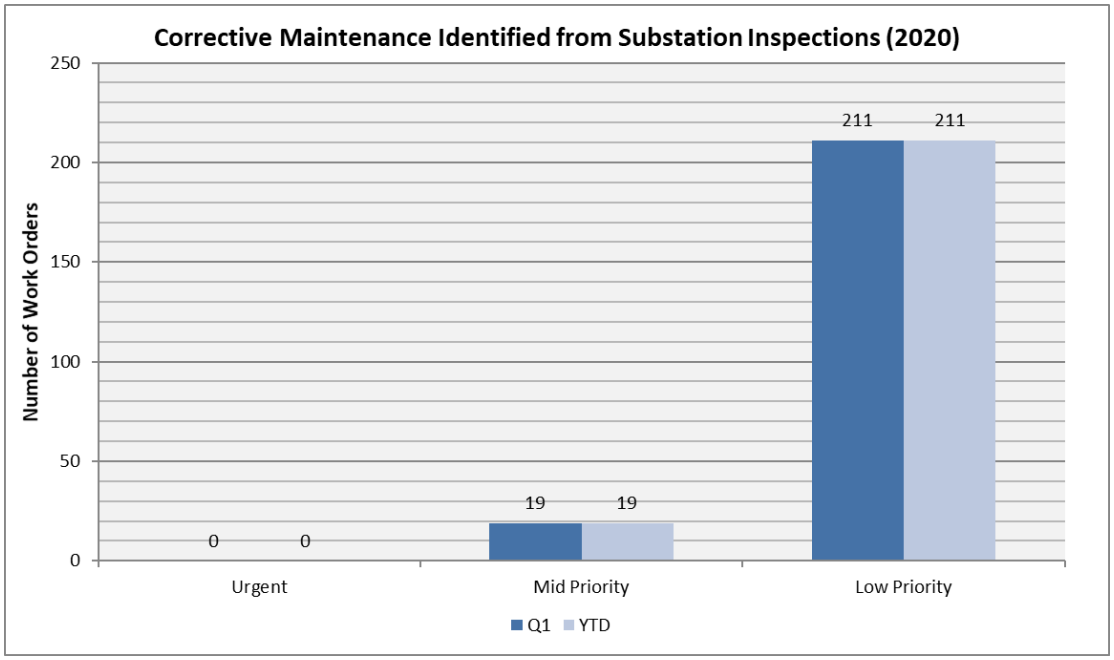

Figure 1: Corrective Maintenance Work Orders by Priority Level for first quarter and year-to-date 2020

(b) The Amount Spent on Substation Inspections

During the first quarter of 2020, PPL Electric spent approximately $122,000 on substation inspections.

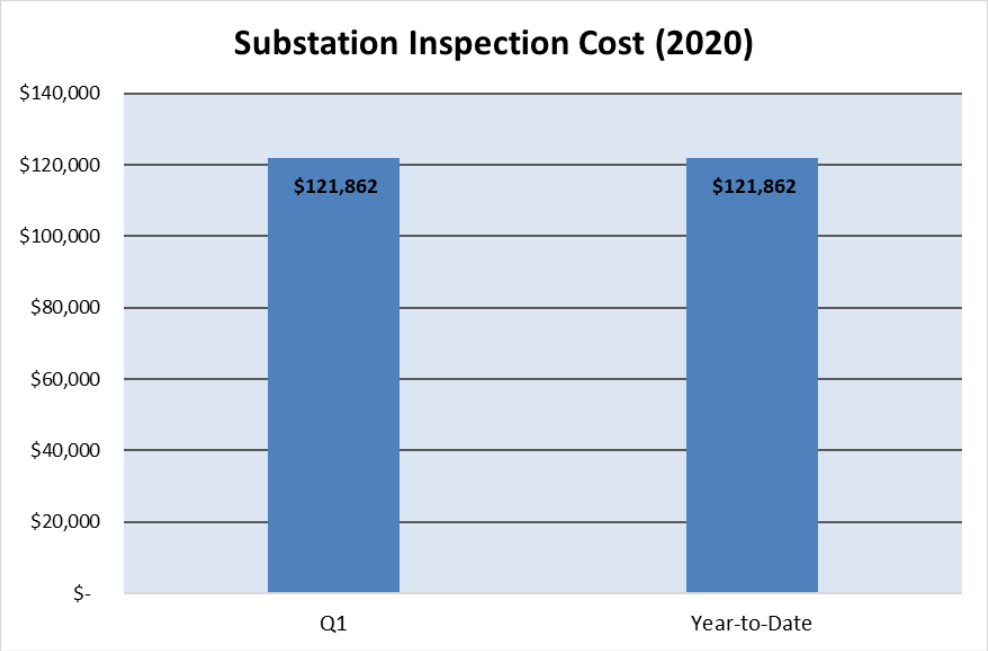

Figure 2: Substation Inspection Costs for first quarter and year-to-date 2020.

(c) The Amount Spent on Vegetation Management

Please refer to Section 7 for vegetation management expenses, for the first 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 first quarter and year-to-date. During first quarter of 2020, PPL Electric avoided a projected 578,000 CMI.

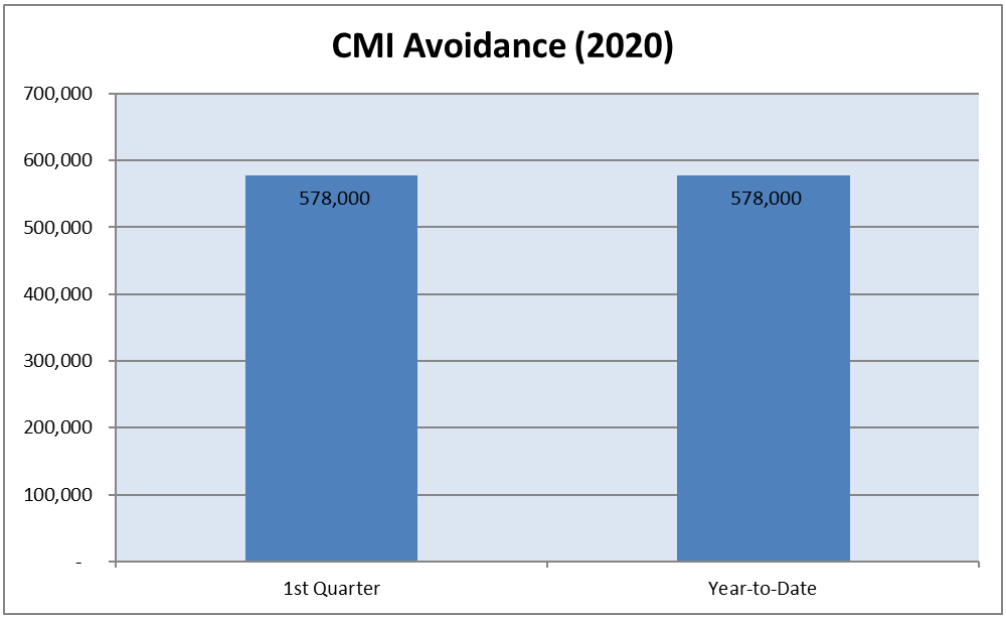

Figure 3: CMI Avoidance Due to Inspections for first quarter and year-to-date 2020

(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 first quarter of 2020, approximately 5,000 customers experienced an interruption for a total of approximately 268,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.

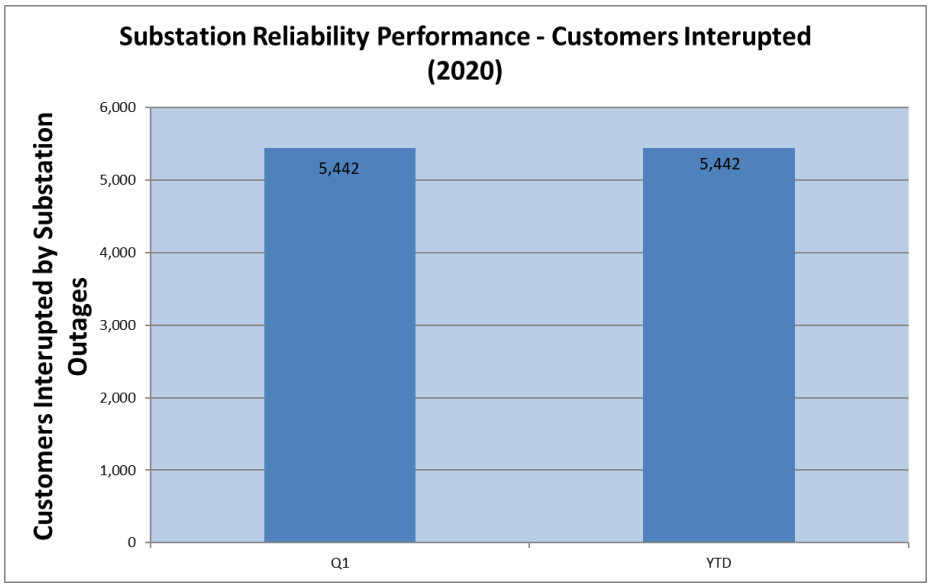

Figure 4: Substation Customers Interrupted for first and year-to-date 2020

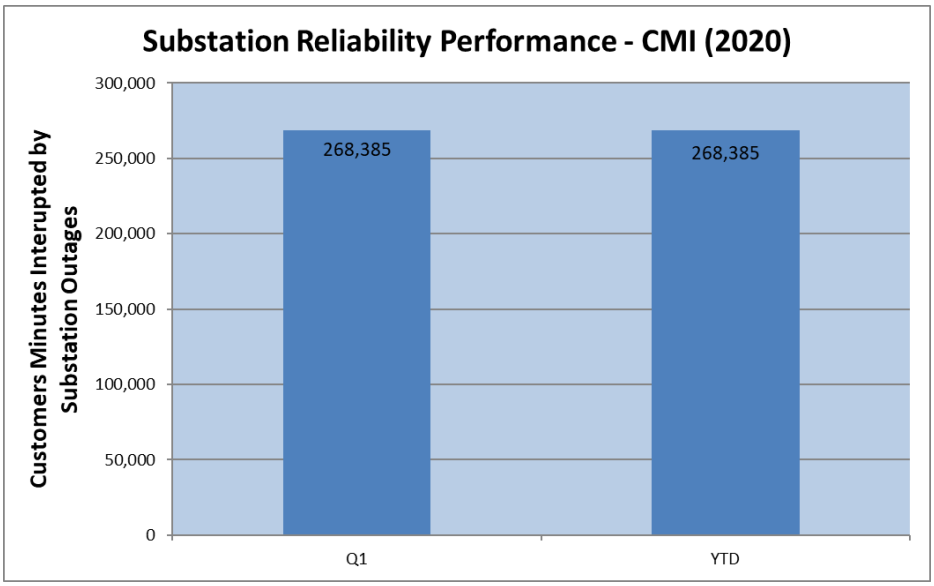

Figure 5: Substation Customer Minutes of Interruption for first quarter and year-to-date 2020

(f) Substation SAIFI Contribution

Overall, substation outages contributed approximately 3% of the total SAIFI experienced by PPL Electric customers in the first 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.

	1st 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	61
Journeyman Lineman	183
Journeyman Lineman-Trainee	28
Helper	28
Groundhand	2
Troubleman	48
T&D Total	**350**
Electrical	
Elect Leaders-UG	2
Elect Leaders-Net	11
Elect Leaders-Sub	24
Journeyman Elect-UG	8
Journeyman Elect-Net	28
Journeyman Elect-Sub	59
Electrical Total	**132**
Overall Total	**482**

Appendix A

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

Circuit	Status	Reason
11303	Would not appear under prior method	On list primarily for high system SAIFI
11504	Would not appear under prior method	On list primarily for high system SAIFI
11506	Would not appear under prior method	On list primarily for high system SAIFI
11804	Does not appear under current method	Lower IEEE CMI due to weather normalization
12202	Would not appear under prior method	On list primarily for high system SAIFI
12402	Does not appear under current method	Lower IEEE CMI due to weather normalization
14801	Would not appear under prior method	On list primarily for high system SAIFI
17801	Would not appear under prior method	On list primarily for high system SAIFI
20403	Does not appear under current method	Lower IEEE CMI due to weather normalization
21203	Would not appear under prior method	On list primarily for high system SAIFI
21502	Does not appear under current method	Lower IEEE CMI due to weather normalization
21705	Does not appear under current method	Lower IEEE CMI due to weather normalization
22401	Would not appear under prior method	On list primarily for high circuit SAIDI
22404	Does not appear under current method	Lower IEEE CMI due to weather normalization
22905	Would not appear under prior method	On list primarily for high system SAIFI
23604	Does not appear under current method	Lower IEEE CMI due to weather normalization
24502	Would not appear under prior method	On list primarily for high system SAIFI
25402	Would not appear under prior method	On list primarily for high system SAIFI
26001	Does not appear under current method	Lower IEEE CMI due to weather normalization
26604	Does not appear under current method	Lower IEEE CMI due to weather normalization
26703	Does not appear under current method	Lower IEEE CMI due to weather normalization
27403	Would not appear under prior method	On list primarily for high system SAIFI
27501	Would not appear under prior method	On list primarily for high system SAIFI
28302	Would not appear under prior method	On list primarily for high system SAIFI
28801	Does not appear under current method	Lower IEEE CMI due to weather normalization
40601	Would not appear under prior method	On list primarily for high circuit SAIDI
41002	Does not appear under current method	Lower IEEE CMI due to weather normalization
41401	Would not appear under prior method	On list primarily for high circuit SAIDI
41602	Does not appear under current method	Lower IEEE CMI due to weather normalization
41802	Would not appear under prior method	On list primarily for high circuit SAIDI
42701	Does not appear under current method	Lower IEEE CMI due to weather normalization
42802	Does not appear under current method	Lower IEEE CMI due to weather normalization
42901	Would not appear under prior method	On list primarily for high system SAIFI
43201	Does not appear under current method	Lower IEEE CMI due to weather normalization
43402	Does not appear under current method	Lower IEEE CMI due to weather normalization
44502	Does not appear under current method	Lower IEEE CMI due to weather normalization
45402	Does not appear under current method	Lower IEEE CMI due to weather normalization
45501	Does not appear under current method	Lower IEEE CMI due to weather normalization
45502	Does not appear under current method	Lower IEEE CMI due to weather normalization
45801	Would not appear under prior method	On list primarily for high system SAIFI
45902	Would not appear under prior method	On list primarily for high circuit SAIDI
46004	Does not appear under current method	Lower IEEE CMI due to weather normalization
46206	Does not appear under current method	Lower IEEE CMI due to weather normalization
46302	Does not appear under current method	Lower IEEE CMI due to weather normalization
47707	Would not appear under prior method	On list primarily for high system SAIFI
54701	Would not appear under prior method	On list primarily for high system SAIFI
55002	Would not appear under prior method	On list primarily for high circuit SAIDI
56504	Would not appear under prior method	On list primarily for high system SAIFI
56803	Does not appear under current method	Lower IEEE CMI due to weather normalization
59302	Would not appear under prior method	On list primarily for high system SAIFI
63201	Would not appear under prior method	On list primarily for high circuit SAIDI

Appendix B

PPL Electric Utilities Corporation

Job Descriptions

Transmission and Distribution

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