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E-FILE

July 30, 2021

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

Re: PPL Electric Utilities Corporation
Quarterly Reliability Report for the
Period Ended June 30, 2021
Docket No. M-2016-2522508

Dear Ms. Chiavetta:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric") is the **NON-CONFIDENTIAL** version of PPL Electric's Quarterly Reliability Report for the Period Ended June 30, 2021 ("Quarterly Reliability Report"). The report is being filed pursuant to 52 Pa. Code § 57.195(d).

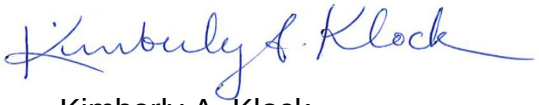
Pursuant to 52 Pa. Code § 1.11, the enclosed document is to be deemed filed on July 30, 2021, which is the date it was filed electronically with the Commission's E-Filing System.

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

Nikki Jones, PPL Electric's Director of Public Affairs, at (717) 603-4029.

Respectfully submitted,



Kimberly A. Klock

Enclosures

cc via email: Darryl Lawrence, Esquire
Steven Gray, Esquire
Mr. Daniel Searfoorce
Mr. John Van Zant

PPL Electric Utilities Corporation

Quarterly Reliability Report

to the

Pennsylvania Public Utility Commission

July 2021

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

No major events occurred during the second quarter of 2021.

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

The following table provides data for the 12 months ending June 30, 2021.

SAIFI	BM 0.98	0.79
	STD 1.18	0.79
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	BM 145	158
	STD 174	158
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	BM 142	126
	STD 205	126
MAIFI		5.0
Average Number of Customers Served [1]		1,441,764
Number of Sustained Customer Interruptions (Trouble Cases)		20,414
Number of Customers Affected [2]		1,144,122
Customer Minutes of Interruptions (CMI)		180,903,840
Number of Customer Momentary Interruptions		7,252,974

During the second quarter, there were no (0) PUC major events, two (2) PUC reportable events, and six (6) other storms that required the opening of one or more area emergency centers to manage restoration efforts.

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

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

PPL Electric's second quarter reliability performance was within the PUC standard and benchmark for all metrics except CAIDI, which was within standard, but nine percent above benchmark.

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 and SAIDI performer, and currently a median 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.

	IEEE CAIDI	IEEE SAIFI	IEEE SAIDI
2018	112	0.74	82.5
2019	113	0.66	74.3
2020	99	0.69	68.6
Rolling 12 Months Ending 6/30/21	112	0.62	70
IEEE First Quartile Ceiling	103	0.85	85
IEEE Second Quartile Ceiling	110	1.01	107

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

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

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
1	52401	781	105	7.46	3.9	1,297	65	1,014,008
2	22602	1447	149	9.74	12.8	593	39	858,449
3	46001	1194	424	2.81	4.8	2,367	66	2,826,971
4	56501	650	219	2.96	14.4	2,343	33	1,523,830
5	20601	761	252	3.03	31.8	1,475	70	1,123,245
6	55001	439	90	4.89	13.1	1,312	132	575,803
7	13601	750	146	5.13	23.6	1,134	33	851,172
8	47704	458	86	5.31	8.1	1,382	87	633,190
9	45302	678	199	3.40	11.2	1,222	70	829,711
10	56504	509	195	2.60	15.6	1,994	109	1,016,746
11	18502	624	170	3.66	23.8	1,869	113	1,166,798
12	61304	284	102	2.78	4.9	1,725	19	490,282
13	22003	569	283	2.01	5.9	1,405	53	800,180
14	27301	328	266	1.23	2.9	2,815	19	924,134
15	43401	954	245	3.89	14.4	993	65	948,251
16	50503	264	134	1.97	0.0	2,124	18	562,793
17	40201	473	215	2.20	10.6	1,668	86	790,440
18	12504	409	102	4.01	13.1	899	12	367,743
19	14403	426	136	3.14	3.1	2,584	120	1,102,441
20	26604	506	123	4.13	19.3	2,424	95	1,226,727
21	45902	762	339	2.25	21.8	1,352	98	1,031,510
22	20403	696	279	2.49	17.2	1,951	129	1,359,357
23	20402	432	231	1.87	10.8	1,910	52	826,030
24	46302	819	380	2.16	3.3	1,097	65	898,995

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
25	40502	321	155	2.07	6.3	1,948	67	627,241
26	40602	251	147	1.70	3.3	2,415	67	607,908
27	52402	227	81	2.79	8.9	1,673	80	380,110
28	45402	514	159	3.24	17.4	1,641	104	844,580
29	10107	199	77	2.59	6.5	1,842	19	368,031
30	15704	503	150	3.34	16.0	1,294	46	652,122
31	16005	804	248	3.25	5.9	1,124	32	904,105
32	26001	642	335	1.92	6.2	1,452	77	932,679
33	46702	582	322	1.81	2.3	1,264	47	736,902
34	25801	564	210	2.69	5.7	1,831	74	1,033,947
35	46004	572	463	1.24	8.5	2,077	35	1,188,921
36	58401	203	92	2.21	7.7	1,518	38	309,652
37	22406	740	171	4.33	12.2	964	59	713,715
38	17001	1384	379	3.65	5.5	863	79	1,194,425
39	51502	295	257	1.15	8.3	1,926	9	570,030
40	48302	742	332	2.23	13.2	1,663	78	1,234,994
41	45602	424	272	1.56	6.8	1,630	54	691,785
42	59401	288	142	2.03	8.6	1,773	65	511,877
43	26401	223	185	1.21	24.5	2,215	106	494,182
44	46402	308	65	4.72	12.3	556	15	171,503
45	13606	273	131	2.08	4.8	1,643	35	449,756
46	60801	282	105	2.69	2.9	797	20	225,078
47	40101	249	226	1.10	12.1	2,152	45	537,785
48	56802	426	241	1.76	5.5	1,538	71	656,692
49	53601	281	147	1.91	3.3	1,121	36	315,983
50	43701	271	125	2.17	1.3	985	16	267,399
51	52403	244	114	2.14	6.6	1,268	60	309,420
52	12301	443	171	2.59	22.6	1,467	52	650,869
53	53903	755	289	2.62	3.6	939	14	709,622
54	11506	1023	267	3.82	9.8	1,313	71	1,343,835
55	47501	660	34	19.28	54.1	67	14	44,226
56	28002	287	214	1.34	4.5	1,239	44	356,109
57	44903	186	137	1.36	8.1	1,745	3	325,672
58	11303	300	179	1.67	8.1	1,651	49	496,413
59	27501	292	136	2.15	9.2	1,266	23	370,504
60	47502	205	72	2.83	4.1	822	23	169,283
61	24902	331	193	1.72	10.8	1,438	39	477,208
62	17803	423	207	2.05	9.7	1,618	54	685,408
63	60605	131	45	2.88	4.8	1,452	13	190,281

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

01 Circuit 52401 -- GREEN PARK 24-01

Performance Analysis

The GREEN PARK 24-01 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On July 5, 2020, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 5,050 customers for up to 156 minutes resulting in 662,293 CMI.

In total, the GREEN PARK 24-01 circuit had 72 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (44); equipment failure (16); animal contacts (7); nothing found (2); vehicles (2); contact or dig in (1).

Remedial Actions

- In 2020, multiple hazard trees were removed.
- In 2020, three single-phase reclosers were installed.
- In 2020, a transmission upgrade was completed.
- In 2021, nine additional fuses will be installed.
- In 2021, protective device coordination will be reviewed.
- In 2022, full circuit trimming will be performed.
- In 2022, two sections of single-phase will be relocated.
- In 2022, a section of single-phase will be reconductored.
- In 2022, additional sectionalizing devices will be installed.
- In 2022, an additional Smart Grid device will be installed.

02 Circuit 22602 -- KIMBLES 26-02

Performance Analysis

The KIMBLES 26-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On November 17, 2020, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 4,168 customers for up to 239 minutes resulting in 560,955 CMI.

In total, the KIMBLES 26-02 circuit had 40 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (18); animal contacts (10); equipment failure (6); vehicles (3); nothing found (2); other (1).

Remedial Actions

- In 2021, four dissimilar metal connections were remediated.
- In 2021, additional fusing was installed.
- In 2021, additional animal guarding was installed with more to be done.
- In 2021, a new tie line will be constructed.
- In 2021, full circuit trimming will be performed.
- In 2021, numerous porcelain cutouts will be replaced.
- In 2021, an additional Smart Grid device will be evaluated.
- In 2021 and 2022, five additional single-phase reclosers will be installed.

03 Circuit 46001 -- BERWICK 60-01

Performance Analysis

The BERWICK 60-01 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On June 14, 2021, during a period of heavy rain, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 937 customers for up to 225 minutes resulting in 187,513 CMI.

On October 26, 2020, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,362 customers for up to 1,854 minutes resulting in 2,020,159 CMI.

In total, the BERWICK 60-01 circuit had 54 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (31); equipment failure (13); animal contacts (4); nothing found (4); other (1); vehicles (1).

Remedial Actions

- In 2021, a section of difficult-to-access to conductor will be relocated and the customers transferred to another circuit.
- In 2021, the section of conductor that experienced the large failure in 2020 will be reconductored.
- In 2021, an alternate feed will be evaluated for the customers who experienced the large outage in 2020.
- In 2022, full circuit trimming will be performed.
- In 2022, an additional single-phase recloser will be installed.

04 Circuit 56501 -- ROCKVILLE 65-01

Performance Analysis

The ROCKVILLE 65-01 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On October 17, 2020, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 5,002 customers for up to 316 minutes resulting in 1,254,262 CMI.

In total, the ROCKVILLE 65-01 circuit had 34 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (18); animal contacts (7); equipment failure (7); vehicles (2).

Remedial Actions

- In 2020, 18 locations received animal guarding.
- In 2020, nine new fuses were installed.
- In 2020, ten new single-phase reclosers were installed and will have protection settings optimized in 2021.
- In 2020, three new Smart Grid devices were evaluated and will be installed in 2023.
- In 2021, an additional Smart Grid device was installed.
- In 2021, an additional tie line was installed.
- In 2021, a new substation and three-phase reconductoring will be evaluated.
- In 2021, a section of line was re-sourced.
- In 2021, sections of single-phase and three-phase will be reconductored.
- In 2021, a new three-phase tie will be evaluated.
- In 2021, two new single-phase reclosers will be evaluated.

05 Circuit 20601 -- GREENWOOD 06-01

Performance Analysis

The GREENWOOD 06-01 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On November 1, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 924 customers for up to 575 minutes resulting in 308,063 CMI.

On February 16, 2021, during a period of heavy rain, an equipment failure occurred on a pole or pole arm causing a recloser to trip to lockout. This outage affected 307 customers for up to 478 minutes resulting in 146,742 CMI.

In total, the GREENWOOD 06-01 circuit had 63 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (27); equipment failure (16); animal contacts (14); nothing found (4); vehicles (2).

Remedial Actions

- In 2020, seven additional fuses were installed.
- In 2020, an adjacent circuit was reconductored to improve transfer capability.
- In 2020, two additional single-phase reclosers were installed.
- In 2020, an existing recloser was replaced with a Smart Grid device.
- In 2020, a section of two-phase conductor was upgraded to three-phase.
- In 2021, an additional single-phase recloser was installed.
- In 2021, additional fusing was installed at six locations.
- In 2021, additional single-phase ties will be evaluated.
- In 2021, full circuit trimming will be performed.

06 Circuit 55001 -- NEWPORT 50-01

Performance Analysis

The NEWPORT 50-01 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

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

On April 1, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a temporary open point to be interrupted. This outage affected 1,391 customers for up to 191 minutes resulting in 110,888 CMI.

In total, the NEWPORT 50-01 circuit had 90 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (57); equipment failure (18); animal contacts (8); vehicles (4); Improper Design (1); nothing found (1); other (1).

Remedial Actions

- In 2020, three single-phase reclosers were installed.
- In 2020, three fuses were installed.
- In 2020, full circuit trimming was performed.
- In 2020, a section of single-phase was resourced.
- In 2020, a Proactive Circuit Analysis was performed with several minor remediations implemented.
- In 2021, an additional single-phase recloser was installed.
- In 2021, six additional fuses will be installed.
- In 2022, a section of three-phase conductor in a heavily wooded area will be relocated.

- In 2022, a section of single-phase will be reconductored.
- In 2023, a section of single-phase will be resourced.

07 Circuit 13601 -- RICHLAND 36-01

Performance Analysis

The RICHLAND 36-01 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On May 3, 2021, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 599 customers for up to 187 minutes resulting in 104,733 CMI.

On August 8, 2020, an equipment failure occurred on an overhead component causing a circuit breaker to trip to lockout. This outage affected 2,134 customers for up to 0 minutes resulting in 308,352 CMI.

In total, the RICHLAND 36-01 circuit had 31 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (19); equipment failure (7); animal contacts (4); other (1).

Remedial Actions

- In 2020, additional animal guarding was installed.
- In 2020, additional fusing was installed.
- In 2020, two dissimilar metal connections were remediated.
- In 2021, a section of aerial conductor outside of the substation was replaced.
- In 2021, two additional single-phase reclosers were installed.
- In 2021, additional fusing will be installed.
- In 2021, full circuit trimming will be performed.
- In 2021, flood mitigation options will be evaluated for the substation.
- In 2021, a pole with multiple vehicle strikes will be relocated.
- In 2021, an additional Smart Grid device will be evaluated.
- In 2021, additional animal guarding will be installed.
- In 2022, three additional single-phase recloser will be installed.

08 Circuit 47704 -- BLOOMSBURG 77-04

Performance Analysis

The BLOOMSBURG 77-04 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the BLOOMSBURG 77-04 circuit had 87 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (54); equipment failure (16); animal contacts (12); other (3); nothing found (2).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2021, two single-phase reclosers were installed.
- In 2021, a section of line will be reconductored.
- In 2021, an additional single-phase recloser will be evaluated.
- In 2021, the protection setting on a three-phase device will be evaluated and optimized.
- In 2021, relocation of a section of single-phase conductor will be evaluated.
- In 2022, a section of conductor in a heavily wooded area will be undergrounded.

09 Circuit 45302 -- WEST BERWICK 53-02

Performance Analysis

The WEST BERWICK 53-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On October 10, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 466 customers for up to 463 minutes resulting in 161,729 CMI.

In total, the WEST BERWICK 53-02 circuit had 57 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (35); animal contacts (8); equipment failure (8); nothing found (5); vehicles (1).

Remedial Actions

- In 2021, a section of difficult-to-access conductor will be relocated.
- In 2021, additional fusing will be installed.
- In 2022, a section of difficult-to-access conductor will be relocated.
- In 2022, full circuit trimming will be performed.
- In 2023, a section of difficult-to-access conductor will be relocated.

10 Circuit 56504 -- ROCKVILLE 65-04

Performance Analysis

The ROCKVILLE 65-04 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On April 23, 2021, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,393 customers for up to 377 minutes resulting in 240,231 CMI.

In total, the ROCKVILLE 65-04 circuit had 102 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (63); animal contacts (20); equipment failure (12); other (4); vehicles (2); nothing found (1).

Remedial Actions

- In 2020, eight fuses were installed.
- In 2020, 150 hazard trees were removed.
- In 2020, seven single-phase sectionalizing devices were installed.
- In 2021, one fuse was installed.
- In 2021, additional animal guards will be installed.
- In 2021, additional fusing will be installed.
- In 2021, a section of line will be reconfigured to improve reliability.
- In 2021, a section of single-phase resourcing will be evaluated.
- In 2022, a section of single-phase will be relocated underground.
- In 2022, five additional single-phase reclosers will be installed.
- In 2022, full circuit trimming will be performed.

11 Circuit 18502 -- CANADENSIS 85-02

Performance Analysis

The CANADENSIS 85-02 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the CANADENSIS 85-02 circuit had 103 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (73); animal contacts (12); equipment failure (9); nothing found (3); vehicles (3); other (2); contact or dig in (1).

Remedial Actions

- In 2021, full circuit trimming will be performed.
- In 2021, hazard tree removal will be performed.
- In 2021, additional single-phase reclosers will be installed.
- In 2021, a section of three-phase will be reconductored.
- In 2021, an additional Smart Grid device will be installed.
- In 2021, tree cable will be installed in a section of heavily wooded conductor.
- In 2021, additional fusing will be installed.
- In 2021, an additional single-phase tie will be evaluated.

12 Circuit 61304 -- EARL 13-04

Performance Analysis

The EARL 13-04 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On July 17, 2020, during a period of extreme temperatures, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 1,662 customers for up to 286 minutes resulting in 337,601 CMI.

In total, the EARL 13-04 circuit had 22 outages between July 2020 and June 2021, with the causes breaking down as follows: animal contacts (8); equipment failure (8); nothing found (3); tree related (2); vehicles (1).

Remedial Actions

- In 2020, a section of difficult-to-access single-phase was relocated.
- In 2020, an additional single-phase fuse was installed.
- In 2021, an existing recloser will be replaced with a Smart Grid device.
- In 2021, an additional single-phase recloser will be installed.
- In 2021, a new line and terminal will be constructed on an adjacent circuit, increasing tie capabilities.
- In 2022, a complete substation rebuild will occur.
- In 2022, an additional three-phase recloser will be upgraded to a telemetered device.
- In 2022, five single-phase reclosers will be installed.
- In 2023, two additional single-phase reclosers will be installed.
- In 2023, full circuit trimming will be performed.

13 Circuit 22003 -- BOHEMIA 20-03

Performance Analysis

The BOHEMIA 20-03 circuit experienced three outages of over 100,000 CMI between July 2020 and June 2021.

On February 9, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 556 customers for up to 673 minutes resulting in 374,082 CMI.

On October 8, 2020, a tree contacted a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 567 customers for up to 440 minutes resulting in 249,485 CMI.

In total, the BOHEMIA 20-03 circuit had 60 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (26); animal contacts (18); equipment failure (9); nothing found (7).

Remedial Actions

- In 2021, a new tie line will be constructed.
- In 2021, additional fusing will be installed.
- In 2021, a section of difficult-to-access conductor will be relocated.
- In 2021, two additional Smart Grid devices will be installed.
- In 2021, additional animal guarding will be installed.
- In 2022, seven additional single-phase reclosers will be installed.
- In 2023, full circuit trimming will be performed.

14 Circuit 27301 -- PARRISH 73-01

Performance Analysis

The PARRISH 73-01 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On August 24, 2020, during a period of strong wind, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 3,200 customers for up to 1,495 minutes resulting in 891,708 CMI.

In total, the PARRISH 73-01 circuit had 24 outages between July 2020 and June 2021, with the causes breaking down as follows: animal contacts (12); equipment failure (9); other (2); tree related (1).

Remedial Actions

- In 2019, a three-phase tie was constructed to the PARRISH 73-03.
- In 2020, a drone patrol was conducted with several minor remediations identified for 2021.
- In 2021, an additional Smart Grid device will be evaluated for this circuit.
- In 2022, a Proactive Circuit Analysis will be performed.

15 Circuit 43401 -- BENTON 34-01

Performance Analysis

The BENTON 34-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the BENTON 34-01 circuit had 54 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (37); equipment failure (8); animal contacts (5); nothing found (2); other (2).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2021, hazard tree removal will be performed.
- In 2021, additional fusing will be installed.
- In 2021, a section of difficult-to-access single-phase circuit will be relocated.
- In 2021, a section of difficult-to-access conductor will be evaluated for relocation or undergrounding.
- In 2022, two single-phase reclosers will be installed.

16 Circuit 50503 -- MECHANICSBURG 05-03

Performance Analysis

The MECHANICSBURG 05-03 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On August 23, 2020, a vehicle contacted a pole or pole arm causing a temporary open point to be interrupted. This outage affected 1,888 customers for up to 517 minutes resulting in 320,003 CMI.

On August 24, 2020, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,089 customers for up to 206 minutes resulting in 214,695 CMI.

In total, the MECHANICSBURG 05-03 circuit had 24 outages between July 2020 and June 2021, with the causes breaking down as follows: animal contacts (7); equipment failure (7); tree related (6); contact or dig in (1); nothing found (1); other (1); vehicles (1).

Remedial Actions

- In 2020, a new three-phase sectionalizing device was installed.
- In 2020, additional animal guarding was installed.
- In 2021, full circuit trimming was performed.
- In 2021, an infrared inspection was performed with minor remediations performed.
- In 2021, additional animal guarding was installed with more to be performed.
- In 2021, reconductoring will be evaluated.

17 Circuit 40201 -- BEAR GAP 02-01

Performance Analysis

The BEAR GAP 02-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the BEAR GAP 02-01 circuit had 84 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (55); animal contacts (15); equipment failure (6); nothing found (5); vehicles (2); other (1).

Remedial Actions

- In 2020, a single-phase recloser was replaced.
- In 2020, additional fusing was installed at four locations.
- In 2020, full circuit trimming was performed.
- In 2020, a section of existing conductor was relocated and reconductored.
- In 2021, six single-phase reclosers were installed.
- In 2021, a single-phase recloser was replaced.
- In 2022, a section of conductor in a heavily wooded area will be undergrounded.
- In 2022, a section of single-phase will be relocated.

18 Circuit 12504 -- MINSI TRAIL 25-04

Performance Analysis

The MINSI TRAIL 25-04 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On August 2, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 501 customers for up to 359 minutes resulting in 105,315 CMI.

In total, the MINSI TRAIL 25-04 circuit had 12 outages between July 2020 and June 2021, with the causes breaking down as follows: equipment failure (5); nothing found (3); tree related (2); vehicles (2).

Remedial Actions

- In 2021, three locations will receive fusing.
- In 2021, an infrared inspection was performed with several minor remediations implemented.

19 Circuit 14403 -- SO SLATINGTON 44-03

Performance Analysis

The SO SLATINGTON 44-03 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the SO SLATINGTON 44-03 circuit had 109 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (54); equipment failure (34); nothing found (11); vehicles (5); animal contacts (3); contact or dig in (1); other (1).

Remedial Actions

- In 2020, additional fusing was installed.
- In 2020, an additional single-phase recloser was installed.
- In 2021, additional fusing was installed at fourteen locations with more to be performed.
- In 2021, four additional single-phase reclosers were installed with one more planned.
- In 2021, a section of single-phase conductor was relocated and another will be evaluated.
- In 2022, full circuit trimming will be performed.
- In 2022, six additional single-phase reclosers will be installed.
- In 2022, a section of single-phase conductor will be relocated.

20 Circuit 26604 -- BROOKSIDE 66-04

Performance Analysis

The BROOKSIDE 66-04 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On May 1, 2021, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 278 customers for up to 445 minutes resulting in 123,482 CMI.

In total, the BROOKSIDE 66-04 circuit had 92 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (52); animal contacts (18); equipment failure (14); nothing found (5); vehicles (2); other (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2021, numerous porcelain cutouts will be replaced.
- In 2021, additional animal guarding will be installed.
- In 2021 and 2022, eleven single-phase reclosers will be installed.
- In 2021, additional fusing will be installed.
- In 2021, an additional Smart Grid device will be evaluated.
- In 2023, an additional single-phase tie device will be installed.

21 Circuit 45902 -- AUBURN 59-02

Performance Analysis

The AUBURN 59-02 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On July 3, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 188 customers for up to 665 minutes resulting in 125,097 CMI.

On August 2, 2020, during a period of heavy rain, a tree contacted an overhead conductor causing a temporary open point to be interrupted. This outage affected 455 customers for up to 353 minutes resulting in 103,070 CMI.

In total, the AUBURN 59-02 circuit had 81 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (54); equipment failure (11); animal contacts (10); nothing found (4); vehicles (2).

Remedial Actions

- In 2020, additional fusing was installed at several locations.
- In 2020, a dissimilar metal connection was remediated.
- In 2020, multiple cross arms were replaced.
- In 2020, multiple porcelain cutouts were replaced.
- In 2021, hazard tree removal was performed.
- In 2021, additional fusing will be installed.
- In 2022, nine single-phase reclosers will be installed.
- In 2022, a section of difficult-to-access conductor will be relocated.
- In 2023, the AUBURN substation will be configured to be remotely transferrable.
- In 2023, a section of this circuit will be transferred to a new line.
- In 2023, full circuit trimming will be performed.

22 Circuit 20403 -- ASHFIELD 04-03

Performance Analysis

The ASHFIELD 04-03 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the ASHFIELD 04-03 circuit had 103 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (56); equipment failure (17); animal contacts (14); vehicles (9); nothing found (4); other (3).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2020, additional hot spot trimming was performed.
- In 2020, two and one-half miles of three-phase conductor was rebuilt.
- In 2020, a section of difficult-to-access single-phase was relocated.
- In 2021, single-phase ties will be evaluated for this circuit.
- In 2021, three additional single-phase reclosers were installed on this circuit.
- In 2021, an existing recloser was upgraded to a Smart Grid device.
- In 2021, a section of difficult-to-access conductor will be relocated.
- In 2022, four additional single-phase reclosers will be installed.
- In 2023, a section of single-phase will be extended.

23 Circuit 20402 -- ASHFIELD 04-02

Performance Analysis

The ASHFIELD 04-02 circuit experienced three outages of over 100,000 CMI between July 2020 and June 2021.

On November 1, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 275 customers for up to 1,056 minutes resulting in 290,356 CMI.

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

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

In total, the ASHFIELD 04-02 circuit had 51 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (24); animal contacts (16); equipment failure (8); contact or dig in (1); nothing found (1); vehicles (1).

Remedial Actions

- In 2020, a new Smart Grid device was installed.
- In 2021, 200 hazard trees were removed.
- In 2021, two additional single-phase reclosers were installed.
- In 2021, additional fusing was installed at five locations.
- In 2021, three sections of single-phase will be relocated and another will be evaluated.
- In 2021, a four-mile section of difficult-to-access single-phase will be upgraded to three-phase and relocated to a more accessible location.
- In 2021, an additional Smart Grid device will be installed.
- In 2021, a section of underground will be evaluated for extension.
- In 2021, a three-phase tie will be evaluated.

24 Circuit 46302 -- ROHRSBURG 63-02

Performance Analysis

The ROHRSBURG 63-02 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On July 3, 2020, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 296 customers for up to 71 minutes resulting in 149,980 CMI.

On September 30, 2020, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 193 customers for up to 725 minutes resulting in 122,581 CMI.

In total, the ROHRSBURG 63-02 circuit had 61 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (39); equipment failure (9); animal contacts (7); nothing found (4); contact or dig in (1); other (1).

Remedial Actions

- In 2021, a sectionalizing device will be relocated.
- In 2021, addition fusing will be installed.
- In 2021, a section of three-phase conductor will be relocated.
- In 2021, additional fusing will be installed.
- In 2021, a section of difficult-to-access conductor will be evaluated for relocation.

25 Circuit 40502 -- CRESSONA 05-02

Performance Analysis

The CRESSONA 05-02 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the CRESSONA 05-02 circuit had 70 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (32); equipment failure (15); animal contacts (13); nothing found (4); vehicles (4); other (2).

Remedial Actions

- In 2020, a three-phase sectionalizing device was replaced.
- In 2020, full circuit trimming was performed.
- In 2020, additional fusing was installed.
- In 2021, two single-phase reclosers were installed.
- In 2021, three poles were replaced.
- In 2022, four additional single-phase reclosers will be installed.
- In 2023, a section of this line will be transferred to a new line.

26 Circuit 40602 -- PINE GROVE 06-02

Performance Analysis

The PINE GROVE 06-02 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On March 9, 2021, an equipment failure occurred on a pole or pole arm causing a motor operated switch to be interrupted. This outage affected 735 customers for up to 303 minutes resulting in 222,094 CMI.

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

In total, the PINE GROVE 06-02 circuit had 82 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (45); equipment failure (19); animal contacts (9); nothing found (5); other (2); vehicles (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, an additional single-phase recloser was installed.
- In 2020, a section of single-phase line was reconductored to three-phase, and the protection settings upgraded.
- In 2021, an additional Smart Grid device was installed.
- In 2021, five additional fuses will be installed.
- In 2022, a section of difficult-to-access single-phase will be relocated.
- In 2022, full circuit trimming will be performed.
- In 2022, an additional single-phase recloser will be installed.

27 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the GREEN PARK 24-02 circuit had 91 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (51); animal contacts (18); equipment failure (15); nothing found (3); vehicles (3); contact or dig in (1).

Remedial Actions

- In 2020, five sections of conductor were relocated.
- In 2020, a second transmission source to the distribution substation was constructed.
- In 2020, six single-phase sectionalizing devices were installed.
- In 2020, a Proactive Circuit Analysis was performed, several future remediations were performed as a result.
- In 2020, additional animal guarding was installed.
- In 2020, additional fusing was installed.
- In 2021, two sections of single-phase will be relocated overhead.
- In 2021, 215 hazard trees will be removed.
- In 2021, a section of single-phase will be relocated to underground.
- In 2021, additional animal guarding will be installed.
- In 2021, one section of single-phase will be reconductored.
- In 2021, expanded trimming right-of-way was obtained for sections of this circuit.
- In 2022, full circuit trimming will be performed.
- In 2022, an additional section of single-phase will be reconductored.
- In 2022, a section of single phase will be relocated.

- In 2022, two sections of single-phase will be re-sourced to reduce exposure.

28 Circuit 45402 -- WEST BLOOMSBURG 54-02

Performance Analysis

The WEST BLOOMSBURG 54-02 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the WEST BLOOMSBURG 54-02 circuit had 90 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (62); equipment failure (11); animal contacts (7); nothing found (4); other (3); vehicles (3).

Remedial Actions

- In 2021, fault indicators were installed on a section of this circuit and more will be evaluated.
- In 2021, three single-phase reclosers were installed.
- In 2021, undergrounding will be evaluated for a section of this circuit.
- In 2021, hot spot trimming will be evaluated for this circuit.
- In 2021, additional fusing will be installed.
- In 2021, an additional single-phase recloser will be evaluated.
- In 2022, five single-phase reclosers will be installed.
- In 2022, full circuit trimming will be performed.

29 Circuit 10107 -- ALLENTOWN 01-07

Performance Analysis

The ALLENTOWN 01-07 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On August 24, 2020, during a period of heavy rain, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 675 customers for up to 3 minutes resulting in 128,234 CMI.

In total, the ALLENTOWN 01-07 circuit had 21 outages between July 2020 and June 2021, with the causes breaking down as follows: equipment failure (12); tree related (3); nothing found (2); other (2); animal contacts (1); vehicles (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2021, two poles were replaced on this circuit with six more to be performed.
- In 2021, several cutouts, cross arms, poles, and insulators were replaced with more to be performed.
- In 2021, additional fusing will be installed.
- In 2021, several spans of open conductor will be replaced with covered conductor.

30 Circuit 15704 -- TANNERSVILLE 57-04

Performance Analysis

The TANNERSVILLE 57-04 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On July 2, 2020, a tree contacted a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 725 customers for up to 751 minutes resulting in 230,592 CMI.

In total, the TANNERSVILLE 57-04 circuit had 43 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (22); animal contacts (8); equipment failure (7); vehicles (5); nothing found (1).

Remedial Actions

- In 2019, full circuit trimming was performed.
- In 2020, a recloser was replaced on this circuit.
- In 2020, several dissimilar metal connections were remediated.
- In 2021, additional animal guarding will be installed.
- In 2021, the protection setting on this circuit will be reviewed.
- In 2022, eight additional single-phase reclosers will be installed.
- In 2022, additional fusing will be installed.
- In 2022, full circuit trimming will be performed.
- In 2022, additional storm hardening will be performed.
- In 2022, a section of difficult-to-access conductor will be relocated.

31 Circuit 16005 -- DORNEYVILLE 60-05

Performance Analysis

The DORNEYVILLE 60-05 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On May 26, 2021, during a period of strong wind, a tree contacted an overhead transformer causing a recloser to trip to lockout. This outage affected 146 customers for up to 1,410 minutes resulting in 205,732 CMI.

On May 26, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,128 customers for up to 1,604 minutes resulting in 334,522 CMI.

In total, the DORNEYVILLE 60-05 circuit had 35 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (19); animal contacts (7); equipment failure (5); nothing found (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2021, additional single-phase reclosers will be evaluated for several locations.
- In 2021, additional fusing will be evaluated.

32 Circuit 26001 -- WEST DAMASCUS 60-01

Performance Analysis

The WEST DAMASCUS 60-01 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On June 21, 2021, during a period of heavy rain, an equipment failure occurred on a pole or pole arm causing a recloser to trip to lockout. This outage affected 473 customers for up to 330 minutes resulting in 154,426 CMI.

On February 16, 2021, during a period of ice/sleet/snow, a tree contacted a pole or pole arm causing a sectionalizing device to be interrupted. This outage affected 384 customers for up to 543 minutes resulting in 167,308 CMI.

In total, the WEST DAMASCUS 60-01 circuit had 82 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (41); animal contacts (19); equipment failure (14); nothing found (5); vehicles (2); other (1).

Remedial Actions

- In 2020, additional animal guarding was installed.
- In 2020, eight additional single-phase reclosers were installed.
- In 2021, the protection setting on this circuit will be evaluated.
- In 2021, a section of single-phase will be reconductored and another section evaluated.
- In 2021, numerous porcelain cutouts will be replaced.
- In 2021, additional fusing will be installed.
- In 2021 and 2022, additional single-phase reclosers will be installed.
- In 2023, full circuit trimming will be performed.

33 Circuit 46702 -- RENOVO 67-02

Performance Analysis

The RENOVO 67-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On July 26, 2020, an improper operation occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 1,259 customers for up to 435 minutes resulting in 539,332 CMI.

In total, the RENOVO 67-02 circuit had 55 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (32); animal contacts (8); equipment failure (7); nothing found (5); vehicles (2); Improper Operation (1).

Remedial Actions

- In 2021, two single-phase reclosers were installed.
- In 2021, additional animal guarding was installed with more to be added.
- In 2021, an additional sectionalizer was installed with another planned.
- In 2022, two substation transformers will be replaced.
- In 2023, full circuit trimming will be performed.

34 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the SULLIVAN TRAIL 58-01 circuit had 71 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (30); equipment failure (17); animal contacts (14); nothing found (6); other (3); vehicles (1).

Remedial Actions

- In 2020, an off-cycle drone inspection was performed with several minor remediations performed as a result.
- In 2021, three additional single-phase reclosers were installed on this circuit with another scheduled.
- In 2021, a section of three-phase was reconductored.
- In 2021, a section of three-phase conductor was extended.
- In 2021, full circuit trimming will be performed.
- In 2022, a Proactive Circuit Analysis will be performed.

35 Circuit 46004 -- BERWICK 60-04

Performance Analysis

The BERWICK 60-04 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On June 28, 2021, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 1,174 customers for up to 839 minutes resulting in 837,918 CMI.

In total, the BERWICK 60-04 circuit had 43 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (25); equipment failure (9); animal contacts (5); nothing found (3); vehicles (1).

Remedial Actions

- In 2021, additional three-phase ties will be evaluated.
- In 2022, three single-phase reclosers will be installed.
- In 2024, full circuit trimming will be performed.

36 Circuit 58401 -- MOUNT ROCK 84-01

Performance Analysis

The MOUNT ROCK 84-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the MOUNT ROCK 84-01 circuit had 48 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (17); equipment failure (13); animal contacts (12); vehicles (4); nothing found (2).

Remedial Actions

- In 2021, the circuit breaker was upgraded.
- In 2021, additional fusing will be installed.
- In 2021, additional animal guarding will be installed.
- In 2022, several sections of underground conductor will be replaced.
- In 2023, full circuit trimming will be performed.

37 Circuit 22406 -- MORGAN 24-06

Performance Analysis

The MORGAN 24-06 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the MORGAN 24-06 circuit had 48 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (33); animal contacts (6); equipment failure (5); nothing found (3); vehicles (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2021, numerous porcelain cutouts will be replaced.
- In 2021, a single-phase recloser will be installed.
- In 2021, additional animal guarding will be installed.
- In 2021, additional fusing will be evaluated.
- In 2021, a section of difficult-to-access conductor will be evaluated for relocation.
- In 2023, five additional single-phase reclosers will be installed.

38 Circuit 17001 -- RIDGE ROAD 70-01

Performance Analysis

The RIDGE ROAD 70-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the RIDGE ROAD 70-01 circuit had 61 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (42); equipment failure (12); animal contacts (4); nothing found (2); other (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2020, an additional single-phase recloser was installed.
- In 2021, a section of this circuit was transferred to another circuit.
- In 2021, additional single-phase reclosers will be installed.
- In 2021, the protection settings for this circuit will be evaluated.
- In 2022, an additional Smart Grid device will be installed.
- In 2022, two additional single-phase reclosers will be installed.

39 Circuit 51502 -- SWATARA 15-02

Performance Analysis

The SWATARA 15-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On June 30, 2021, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 1,511 customers for up to 539 minutes resulting in 464,987 CMI.

In total, the SWATARA 15-02 circuit had 14 outages between July 2020 and June 2021, with the causes breaking down as follows: equipment failure (6); tree related (4); contact or dig in (2); animal contacts (1); nothing found (1).

Remedial Actions

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

40 Circuit 48302 -- ORWIGSBURG 83-02

Performance Analysis

The ORWIGSBURG 83-02 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On May 7, 2021, an equipment failure occurred on an overhead splice causing a recloser to trip to lockout. This outage affected 774 customers for up to 169 minutes resulting in 130,806 CMI.

On October 30, 2020, during a period of heavy rain, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 772 customers for up to 170 minutes resulting in 131,077 CMI.

In total, the ORWIGSBURG 83-02 circuit had 60 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (42); equipment failure (10); animal contacts (4); nothing found (2); other (2).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2020, additional fusing was installed.
- In 2020, an additional single-phase recloser was installed.
- In 2021, an additional single-phase recloser was installed.
- In 2021, two sections of three-phase will be evaluated for reconductoring.
- In 2022, an additional single-phase recloser will be installed.
- In 2022, an existing recloser will be replaced.

41 Circuit 45602 -- WOOLRICH 56-02

Performance Analysis

The WOOLRICH 56-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On November 1, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a transformer to be interrupted. This outage affected 261 customers for up to 1,228 minutes resulting in 174,881 CMI.

In total, the WOOLRICH 56-02 circuit had 67 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (42); animal contacts (12); equipment failure (9); nothing found (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2021, additional animal guarding will be installed.
- In 2022, additional fusing will be installed.
- In 2022, a section of difficult-to-access three-phase will be relocated.

42 Circuit 59401 -- RICHFIELD 94-01

Performance Analysis

The RICHFIELD 94-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the RICHFIELD 94-01 circuit had 71 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (28); equipment failure (22); animal contacts (16); nothing found (3); other (1); vehicles (1).

Remedial Actions

- In 2020, one animal guard was installed, with several others to be installed in 2021.
- In 2021, a single-phase recloser was installed.
- In 2021, full circuit trimming will be performed.
- In 2021, eight additional fuses will be installed.
- In 2021, additional fusing will be evaluated.
- In 2021, an additional Smart Grid device will be installed.
- In 2022, two additional single-phase reclosers will be installed.
- In 2023, two additional single-phase reclosers will be installed.

43 Circuit 26401 -- INDIAN ORCHARD 64-01

Performance Analysis

The INDIAN ORCHARD 64-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the INDIAN ORCHARD 64-01 circuit had 115 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (59); animal contacts (26); equipment failure (18); nothing found (11); other (1).

Remedial Actions

- In 2021, additional animal guarding will be installed.
- In 2021 and 2022, several additional single-phase reclosers will be installed.
- In 2021, the protection settings on this circuit will be evaluated.
- In 2021, reconductoring will be evaluated at several locations.
- In 2021, additional fusing will be evaluated.

44 Circuit 46402 -- FLEMINGTON 64-02

Performance Analysis

The FLEMINGTON 64-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On July 5, 2020, during a period of extreme temperatures, an equipment failure occurred on a substation component causing a circuit breaker to trip to lockout. This outage affected 2,347 customers for up to 83 minutes resulting in 111,276 CMI.

In total, the FLEMINGTON 64-02 circuit had 19 outages between July 2020 and June 2021, with the causes breaking down as follows: equipment failure (7); tree related (7); animal contacts (3); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2020, additional fusing was installed.
- In 2021, the substation relays were upgraded.
- In 2021, additional animal guarding will be installed.
- In 2021, additional fusing will be installed.

45 Circuit 13606 -- RICHLAND 36-06

Performance Analysis

The RICHLAND 36-06 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On August 5, 2020, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,539 customers for up to 103 minutes resulting in 207,672 CMI.

In total, the RICHLAND 36-06 circuit had 24 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (14); equipment failure (7); animal contacts (1); other (1); vehicles (1).

Remedial Actions

- In 2020, a section of this circuit was reconductored.
- In 2021, a section of aerial cable was replaced.
- In 2021, additional fusing will be installed.
- In 2021, additional animal guarding will be installed.
- In 2021, two single-phase reclosers will be replaced.
- In 2021, hot spot trimming will be performed.
- In 2022, as additional single-phase recloser will be installed.

46 Circuit 60801 -- BUCK 08-01

Performance Analysis

The BUCK 08-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the BUCK 08-01 circuit had 25 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (15); equipment failure (3); other (3); animal contacts (2); vehicles (2).

Remedial Actions

- In 2020, a section of difficult-to-access single-phase was relocated.
- In 2020, an additional single-phase fuse was installed.
- In 2021, an existing recloser will be replaced with a Smart Grid device.
- In 2021, an additional single-phase recloser will be installed.
- In 2021, a new line and terminal will be constructed on an adjacent circuit, increasing tie capabilities.
- In 2021, an additional tie line will be evaluated.
- In 2022, a complete substation rebuild will be performed.
- In 2022, an additional three-phase recloser will be upgraded to a telemetered device.
- In 2022, five single-phase reclosers will be installed.

47 Circuit 40101 -- HUNTER 01-01

Performance Analysis

The HUNTER 01-01 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On June 29, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 680 customers for up to 219 minutes resulting in 148,437 CMI.

On May 13, 2021, a vehicle contact caused a recloser to trip to lockout. This outage affected 679 customers for up to 191 minutes resulting in 129,689 CMI.

In total, the HUNTER 01-01 circuit had 59 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (30); equipment failure (15); animal contacts (12); other (1); vehicles (1).

Remedial Actions

- In 2020, aerial cable was installed in a heavily wooded area.
- In 2021, a three-phase sectionalizing device will be evaluated.
- In 2021, full circuit trimming will be performed.
- In 2021, a new tie line and three-phase sectionalizing device will be installed.
- In 2021, additional animal guarding will be installed.

48 Circuit 56802 -- BENVENUE 68-02

Performance Analysis

The BENVENUE 68-02 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the BENVENUE 68-02 circuit had 71 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (47); equipment failure (10); animal contacts (9); contact or dig in (2); nothing found (2); other (1).

Remedial Actions

- In 2020, seven sectionalizing devices were installed,
- In 2020, a section of single-phase line was resourced.
- In 2020, six additional single-phase reclosers were installed.
- In 2021, full circuit trimming will be performed.
- In 2021, additional fusing will be evaluated.
- In 2022, a section of single-phase will be relocated and reconfigured.
- In 2022, two single-phase reclosers will be installed.
- In 2023, a section of three-phase will be reconductored.
- In 2023, a section of single-phase will be relocated to underground.

49 Circuit 53601 -- DALMATIA 36-01

Performance Analysis

The DALMATIA 36-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the DALMATIA 36-01 circuit had 33 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (16); equipment failure (7); nothing found (5); animal contacts (3); vehicles (2).

Remedial Actions

- In 2020, four additional fuses were installed.
- In 2020, one trip saver was installed.
- In 2021, a section of single-phase line was relocated.
- In 2021, a three-phase sectionalizing device will be evaluated.

50 Circuit 43701 -- WILLIAMSPORT 37-01

Performance Analysis

The WILLIAMSPORT 37-01 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On June 30, 2021, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 986 customers for up to 245 minutes resulting in 158,752 CMI.

In total, the WILLIAMSPORT 37-01 circuit had 18 outages between July 2020 and June 2021, with the causes breaking down as follows: equipment failure (7); animal contacts (4); tree related (4); nothing found (3).

Remedial Actions

- In 2020, additional animal guarding was installed.
- In 2021, additional animal guarding will be installed.
- In 2021, an additional sectionalizing device will be installed.
- In 2021, the protection settings for this circuit will be reviewed.

51 Circuit 52403 -- GREEN PARK 24-03

Performance Analysis

The GREEN PARK 24-03 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the GREEN PARK 24-03 circuit had 74 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (40); equipment failure (21); animal contacts (8); nothing found (3); contact or dig in (2).

Remedial Actions

- In 2019, two single-phase reclosers were installed.
- In 2020, two sections of single-phase were relocated.
- In 2020, a single-phase recloser was installed.
- In 2020, a transmission upgrade was completed.
- In 2021, a section of single-phase will be relocated underground.
- In 2021, two single-phase reclosers will be installed.
- In 2021, a section of single-phase will be evaluated for relocation.
- In 2021, additional fusing will be installed.
- In 2021, 23 hazard trees will be removed.
- In 2023, a substation upgrade will be performed.

52 Circuit 12301 -- LANARK 23-01

Performance Analysis

The LANARK 23-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the LANARK 23-01 circuit had 49 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (18); equipment failure (14); animal contacts (12); vehicles (3); contact or dig in (2).

Remedial Actions

- In 2020, hot spot trimming was performed.
- In 2021, additional animal guarding was installed.
- In 2021, two single-phase reclosers were installed.
- In 2021, an additional single-phase tap will be evaluated.
- In 2022, full circuit trimming will be performed.
- In 2022, two single-phase reclosers will be installed.

53 Circuit 53903 -- HALIFAX 39-03

Performance Analysis

The HALIFAX 39-03 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On February 11, 2021, during a period of ice/sleet/snow, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 506 customers for up to 325 minutes resulting in 138,574 CMI.

On July 31, 2020, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 509 customers for up to 355 minutes resulting in 153,059 CMI.

In total, the HALIFAX 39-03 circuit had 17 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (9); vehicles (4); animal contacts (2); equipment failure (1); other (1).

Remedial Actions

- In 2020, additional animal guarding was installed.
- In 2021, one additional fuse was installed with more to be installed this year.
- In 2021, protection settings for a three-phase recloser will be updated.
- In 2022, three trip savers will be installed.
- In 2021, an additional three-phase sectionalizing device will be evaluated.

54 Circuit 11506 -- FREEMANSBURG 15-06

Performance Analysis

The FREEMANSBURG 15-06 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the FREEMANSBURG 15-06 circuit had 60 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (29); equipment failure (13); animal contacts (9); nothing found (7); vehicles (2).

Remedial Actions

- In 2020, a section of three-phase conductor was extended.
- In 2020, a Smart Grid device was replaced.
- In 2020, a switch at the substation was replaced.
- In 2021, six additional single-phase reclosers were installed with two more to be installed.
- In 2021, additional fusing was installed with more to be performed.
- In 2021, replacement of five reclosers will be evaluated.
- In 2022, a section of this circuit will be reconfigured.
- In 2022, a section of conductor will be split in two and receive single-phase reclosers.
- In 2022, full circuit trimming will be performed.

55 Circuit 47501 -- NEW COLUMBIA 75-01

Performance Analysis

The NEW COLUMBIA 75-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the NEW COLUMBIA 75-01 circuit had 15 outages between July 2020 and June 2021, with the causes breaking down as follows: equipment failure (8); tree related (5); other (1); vehicles (1).

Remedial Actions

- In 2021, a substation transformer was upgraded.
- In 2021, two single-phase reclosers were replaced with a Smart Grid device.
- In 2022, a section of difficult-to-access conductor will be relocated.
- In 2023, full circuit trimming will be performed.

56 Circuit 28002 -- TAFTON 80-02

Performance Analysis

The TAFTON 80-02 circuit experienced two outages of over 100,000 CMI between July 2020 and June 2021.

On November 1, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 638 customers for up to 265 minutes resulting in 169,070 CMI.

On June 9, 2021, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 158 customers for up to 12 minutes resulting in 188,134 CMI.

In total, the TAFTON 80-02 circuit had 53 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (24); equipment failure (21); nothing found (6); animal contacts (2).

Remedial Actions

- In 2021, animal guarding will be installed at 10 locations.
- In 2021, additional single-phase reclosers will be evaluated.
- In 2021, additional fusing will be evaluated.
- In 2021, a three-phase recloser will be programmed for single-phase operation.

57 Circuit 44903 -- SCOTT 49-03

Performance Analysis

The SCOTT 49-03 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On July 3, 2020, during a period of heavy rain, a tree contacted a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,745 customers for up to 281 minutes resulting in 285,765 CMI.

In total, the SCOTT 49-03 circuit had 4 outages between July 2020 and June 2021, with the causes breaking down as follows: animal contacts (2); tree related (1); vehicles (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2021, a section of difficult-to-access conductor will be relocated.
- In 2021, several poles will be upgraded to a larger class.
- In 2021, additional animal guarding will be installed.

58 Circuit 11303 -- EMMAUS 13-03

Performance Analysis

The EMMAUS 13-03 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On November 1, 2020, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 594 customers for up to 227 minutes resulting in 134,600 CMI.

In total, the EMMAUS 13-03 circuit had 48 outages between July 2020 and June 2021, with the causes breaking down as follows: equipment failure (18); animal contacts (14); tree related (10); vehicles (3); other (2); contact or dig in (1).

Remedial Actions

- In 2020, six additional locations received fusing.
- In 2021, a single-phase recloser was installed.
- In 2021, additional fusing was installed.
- In 2021, a section of difficult-to-access conductor was relocated.
- In 2021, full circuit trimming was performed.
- In 2022, seven additional single-phase reclosers will be installed.

59 Circuit 27501 -- WEISSPORT 75-01

Performance Analysis

The WEISSPORT 75-01 circuit experienced no outages of over 100,000 CMI between July 2020 and June 2021.

In total, the WEISSPORT 75-01 circuit had 25 outages between July 2020 and June 2021, with the causes breaking down as follows: animal contacts (8); equipment failure (8); tree related (5); vehicles (2); nothing found (1); other (1).

Remedial Actions

- In 2021, three-phase fusing will be installed.
- In 2021, a section of difficult-to-access three-phase conductor will be evaluated for relocation and reconductoring.
- In 2022, full circuit trimming will be performed.

60 Circuit 47502 -- NEW COLUMBIA 75-02

Performance Analysis

The NEW COLUMBIA 75-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On June 19, 2020, an equipment failure occurred on an underground conductor causing a circuit breaker to trip to lockout. This outage affected 804 customers for up to 360 minutes resulting in 143,800 CMI.

In total, the NEW COLUMBIA 75-02 circuit had 29 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (12); equipment failure (11); animal contacts (3); nothing found (2); vehicles (1).

Remedial Actions

- In 2020, multiple porcelain cutouts were replaced.
- In 2021, two substation transformers were replaced.
- In 2022, a three-phase Smart Grid device will be installed.
- In 2022, two single-phase reclosers will be installed and a section of the circuit will be reconfigured.
- In 2022, additional fusing will be installed.
- In 2022, two reclosers will be relocated to protect more customers.

61 Circuit 24902 -- WHITE HAVEN 49-02

Performance Analysis

The WHITE HAVEN 49-02 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On June 21, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 992 customers for up to 174 minutes resulting in 150,515 CMI.

In total, the WHITE HAVEN 49-02 circuit had 44 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (17); equipment failure (14); animal contacts (5); vehicles (5); nothing found (2); other (1).

Remedial Actions

- In 2020, full circuit trimming was performed.
- In 2022, two single-phase reclosers will be installed.
- In 2021, an existing recloser was replaced with a Smart Grid device.
- In 2021, additional tree trimming will be evaluated.
- In 2022, two single-phase reclosers will be installed.

62 Circuit 17803 -- GILBERT 78-03

Performance Analysis

The GILBERT 78-03 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On December 9, 2020, during a period of ice/sleet/snow, a tree contacted an overhead conductor causing a temporary open point to be interrupted. This outage affected 611 customers for up to 296 minutes resulting in 105,260 CMI.

In total, the GILBERT 78-03 circuit had 46 outages between July 2020 and June 2021, with the causes breaking down as follows: tree related (23); equipment failure (9); animal contacts (8); nothing found (4); vehicles (2).

Remedial Actions

- In 2021, full circuit trimming will be performed.
- In 2021, additional animal guarding will be performed.
- In 2021, several sections of conductor will be relocated and reconductored.
- In 2021, numerous porcelain cutouts will be replaced.
- In 2021, a drone inspection was performed with several minor remediations identified.
- In 2023, numerous single-phase reclosers will be installed.

63 Circuit 60605 -- NORTH COLUMBIA 06-05

Performance Analysis

The NORTH COLUMBIA 06-05 circuit experienced one outage of over 100,000 CMI between July 2020 and June 2021.

On June 30, 2021, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 3,116 customers for up to 561 minutes resulting in 155,747 CMI.

In total, the NORTH COLUMBIA 06-05 circuit had 21 outages between July 2020 and June 2021, with the causes breaking down as follows: animal contacts (7); equipment failure (7); tree related (6); nothing found (1).

Remedial Actions

- In 2021, a single-phase recloser was installed.
- In 2021, three single-phase fuses will be installed.
- In 2021, an infrared scan was performed.
- In 2021, a Proactive Circuit Analysis will be performed.
- In 2021, the protection settings for this circuit will be evaluated.
- In 2022, full circuit trimming will be performed.

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

The following table shows a breakdown of service interruption causes for the 12 months ended at the current quarter.

Cause Description	Trouble Cases	Percent of Trouble Cases	Customer Interruptions	Percent of Customer Interruptions	Customer Minutes	Percent of Customer Minutes
Animals	2,959	14.5%	48,962	4.3%	2,984,179	1.6%
Contact / Dig-In	169	0.8%	13,183	1.2%	721,961	0.4%
Directed by Non-PPL Authority	63	0.3%	11,494	1.0%	859,134	0.5%
Equipment Failures	5,118	25.1%	321,550	28.1%	33,317,288	18.4%
Improper Design	2	0.0%	295	0.0%	22,885	0.0%
Improper Installation	2	0.0%	94	0.0%	5,315	0.0%
Improper Operation	7	0.0%	2,523	0.2%	926,552	0.5%
Nothing Found	981	4.8%	53,912	4.7%	4,615,357	2.6%
Other Controllable	78	0.4%	21,296	1.9%	342,554	0.2%
Other Non Control	238	1.2%	27,156	2.4%	3,501,239	1.9%
Other Public	33	0.2%	2,476	0.2%	190,739	0.1%
Tree Related	10,001	49.0%	534,525	46.7%	121,616,171	67.2%
Unknown	-	0.0%	-	0.0%	-	0.0%
Vehicles	763	3.7%	106,656	9.3%	11,800,466	6.5%
Total	**20,414**	**100.0%**	**1,144,122**	**100.0%**	**180,903,840**	**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 53% of cases, 56% of customer interruptions, and 74% 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 81% of the cases of trouble, 83% of the customer interruptions and 91% of the customer minutes attributed to tree related outages were weather-related.

Animals: Animals accounted for approximately 15% 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 73% of the number of cases of trouble were 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, PPL Electric initiated distribution and substation animal guarding programs in 2009 to focus systematically on protecting existing facilities most at risk of incurring animal-caused interruptions. A complete effectiveness review of this strategy is being evaluated.

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

Equipment Failure: Equipment failure is one of the largest single contributors to the number of cases of trouble, customer interruptions and customer minutes. However, approximately 36% of the cases of trouble, 41% of the customer interruptions and 47% of the customer minutes attributed to equipment failure were weather-related and, as such, are not considered to be strong indicators of equipment condition or performance.

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

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

Inspection & Maintenance Goals/Objectives	Annual Budget	2nd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of poles)	65	25	25	67	67
Transmission arm replacements (# of arms)	8	2	2	6	6
Transmission air break switch inspections (# of switches)	0	0	0	0	0
Transmission surge arrester installations (# of sets)	N/A				
Transmission structure inspections (# of activities)	12,564	3,767	3,767	11,370	11,370
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	539	120	178	282	403
Transmission reclearing (# of miles) 69 kV	998	181	208	449	448
Transmission reclearing (# of miles) 138 kV	80	15	12	35	27
Transmission danger tree removals-Bulk Power (# of trees)	N/A				
Substation					
Substation batteries (# of activities)	1,032	113	146	853	890
Circuit breakers (# of activities)	1,545	233	211	369	334
Substation inspections (# of activities)	2,058	478	472	1,300	1,284
Transformer maintenance (# of activities)	413	134	264	1,020	635

Inspection & Maintenance Goals/Objectives	Annual Budget	2nd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	3,083	461	620	706	943
C-truss distribution poles (# of poles)	N/A	0	0	696	696
Capacitor (MVAR added)	0	0	0	0	0
OCR Replacements (# of)	1	1	1	1	1
Distribution pole inspections (# of poles)	74,500	6,682	1,163	6,693	1,174
Distribution line inspections (miles)	2,200	198	198	198	198
Group re-lamping (# of lamps)	16,140	4,035	3,558	8,070	5,287
Test sections of underground distribution cable	N/A				
Distribution tree trimming (# of miles)	5,848	1,524	1,529	2,955	2,828
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)	519	130	80	260	296
LTN vault inspections (# of)	318	301	75	80	151
LTN network protector overhauls (# of)	69	14	9	27	34
LTN reverse power trip testing (# of)	28	6	9	12	11

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

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

Activity		2nd Quarter		Year-to-date	
	2021 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
Provide Electric Service	6,239	1,557	2,158	2,900	4,057
Vegetation Management	36,696	9,237	9,159	18,284	17,569
Customer Response	61,140	17,290	19,962	29,761	35,539
Reliability Maintenance	25,438	6,787	6,856	13,019	15,207
System Upgrade	3,625	1,072	227	1,917	442
Customer Service/Accounts	119,095	26,350	20,398	53,831	37,875
Others	39,453	9,840	11,247	19,209	27,662
Total O&M Expenses	**291,687**	**72,132**	**70,008**	**138,921**	**138,351**

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

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

Activity		2nd Quarter		Year-to-date	
	2021 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
New Service/Revenue	95,137	26,159	24,824	47,353	49,336
System Upgrade	188,825	48,920	53,706	89,936	104,381
Reliability & Maintenance	422,424	105,445	121,630	198,135	230,480
Customer Response	28,711	9,569	10,469	15,026	20,217
Other	22,271	4,997	1,579	10,942	3,225
Total	**757,367**	**195,091**	**212,209**	**361,392**	**407,639**

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

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 2nd quarter of 2021, 76 corrective work orders were created with the following breakdown by priority.

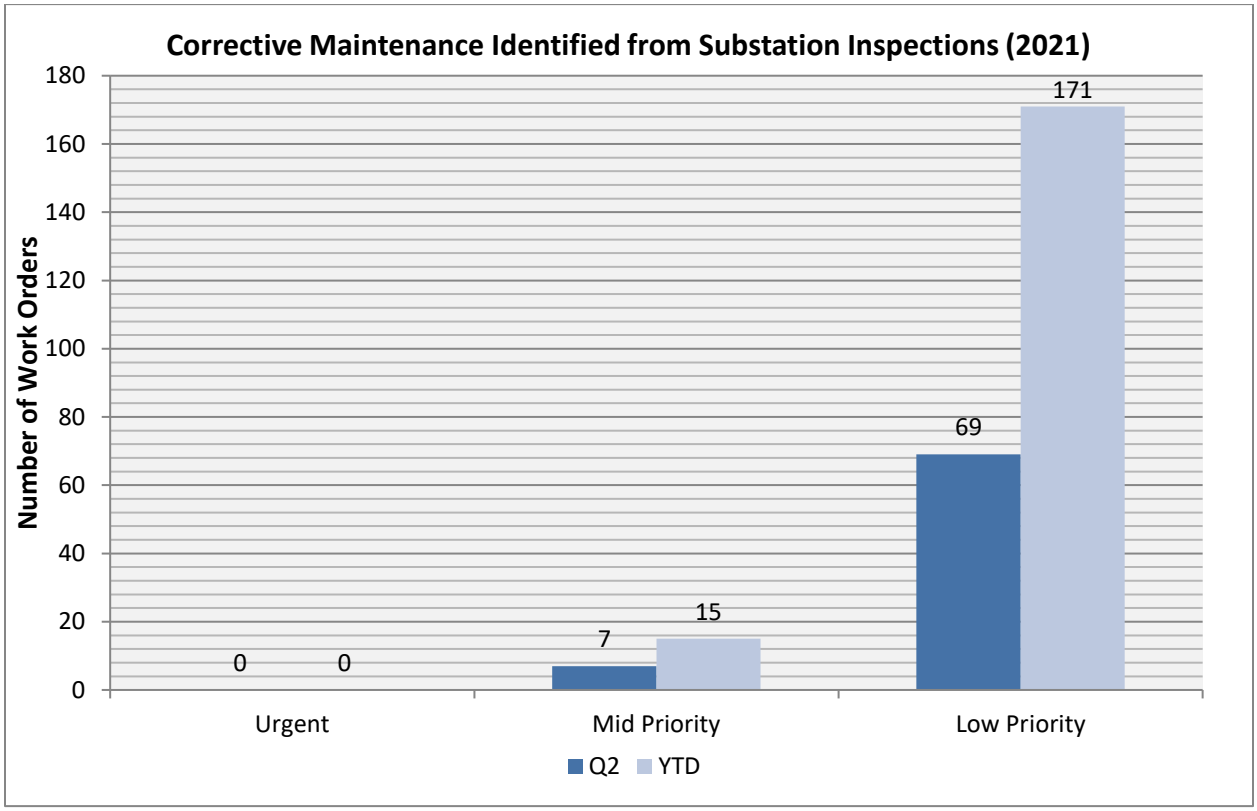


Figure 1: Corrective Maintenance Work Orders by Priority Level for 2nd Quarter and Year-to-Date 2021

(b) The Amount Spent on Substation Inspections

During the 2nd quarter of 2021, PPL Electric Utilities spent approximately $125,000 on substation inspections.

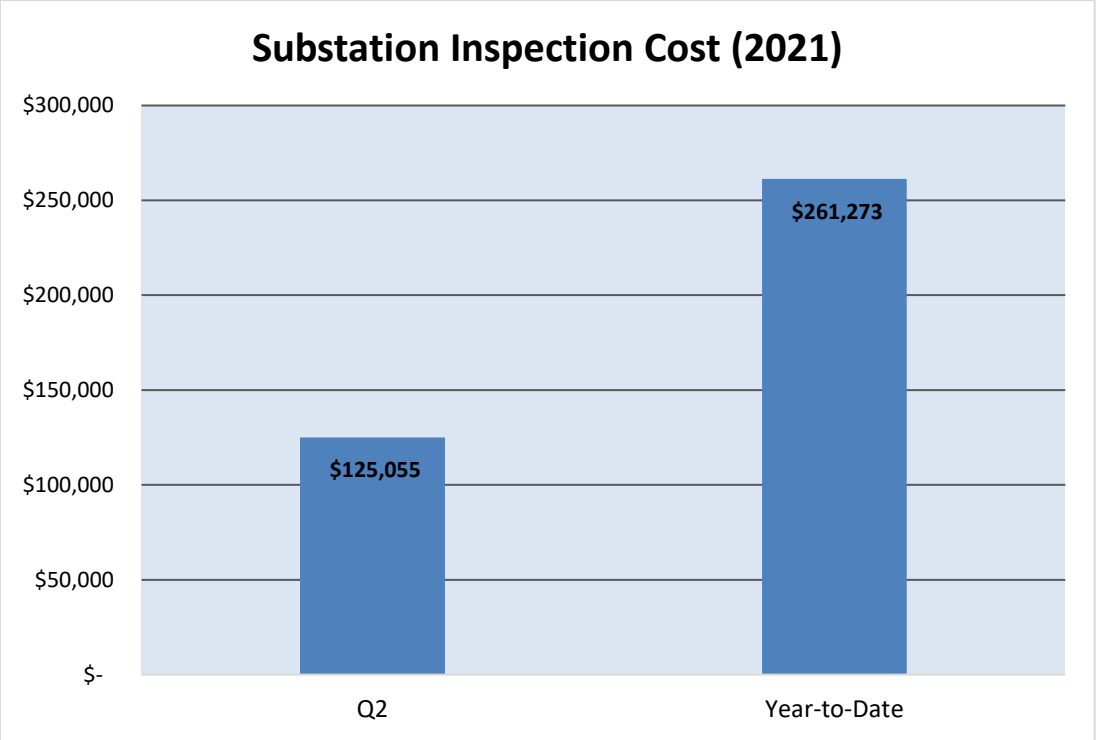


Figure 2: Substation Inspection Costs for 2nd Quarter and Year-to-Date 2021.

(c) The Amount Spent on Vegetation Management

Please refer to Section 7 for vegetation management expenses for the 2nd quarter and year-to-date 2021.

(d) The Projected CMI Avoidance Due to Substation Inspections

Figure 3 below shows the CMI avoidance that PPL Electric Utilities has estimated for the 2nd quarter and year-to-date. During the 2nd quarter of 2021, PPL Electric Utilities avoided a projected 128,000 CMI.

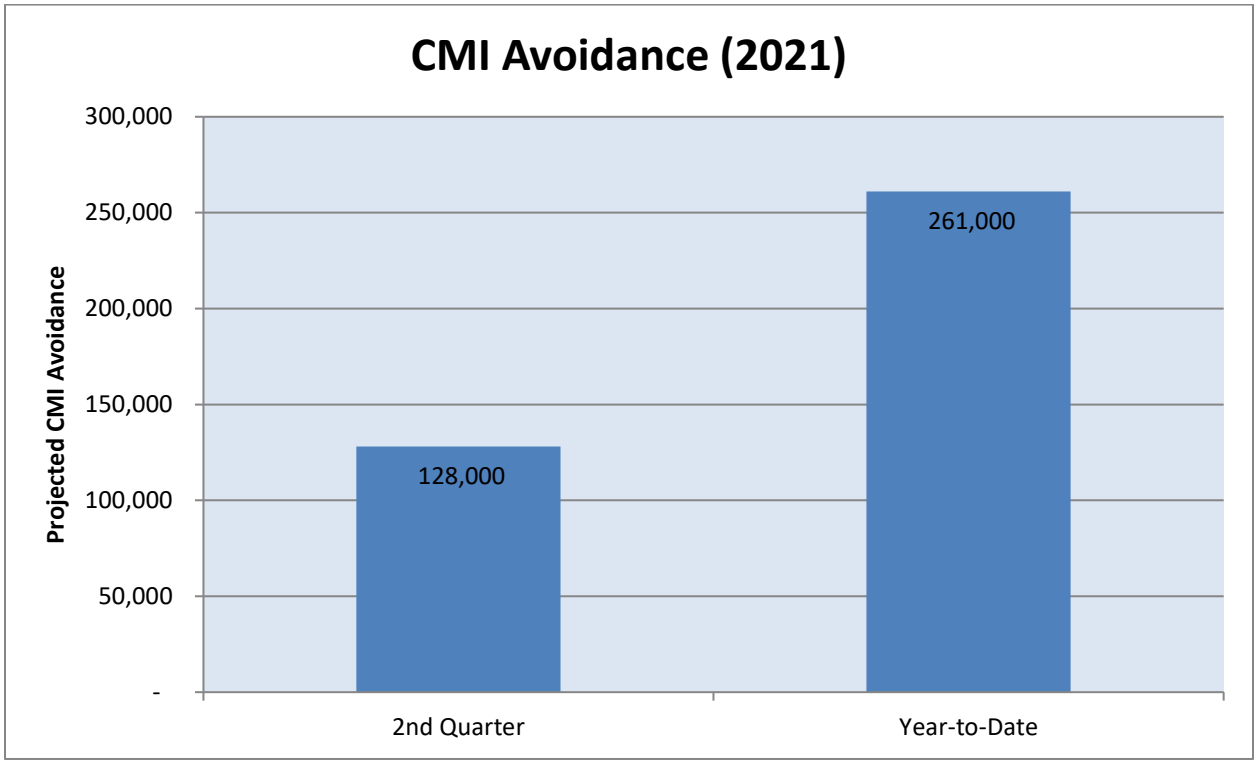


Figure 3: Projected CMI Avoidance Due to Substation Inspections for 2nd Quarter and Year-to-Date 2021

(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 2nd quarter of 2021, the Company interrupted approximately 7,500 customers for a total of 118,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.

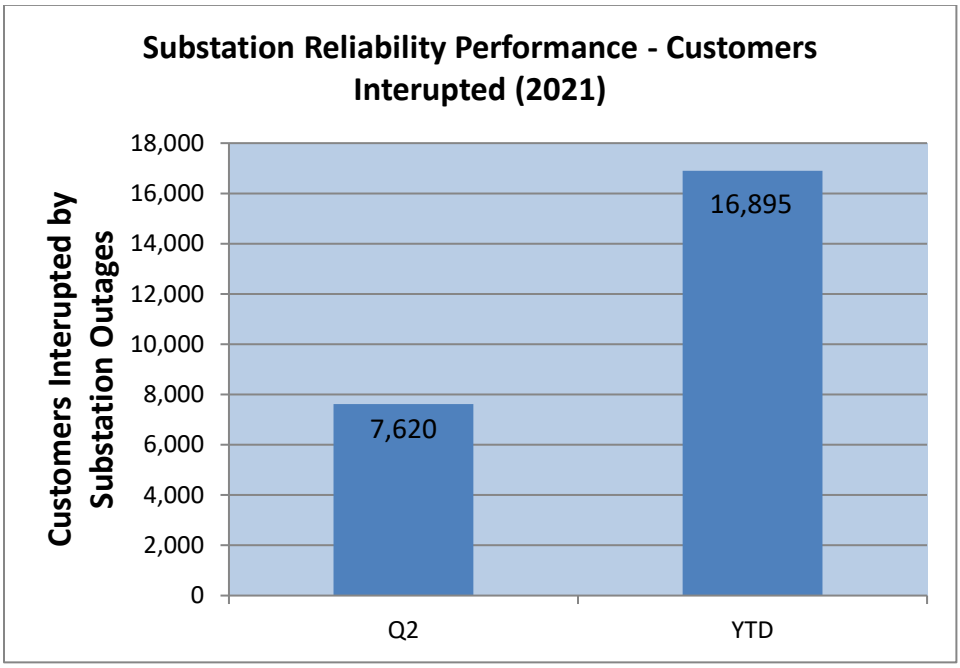


Figure 4: Substation Customers Interrupted for 2nd Quarter and Year-to-Date 2021

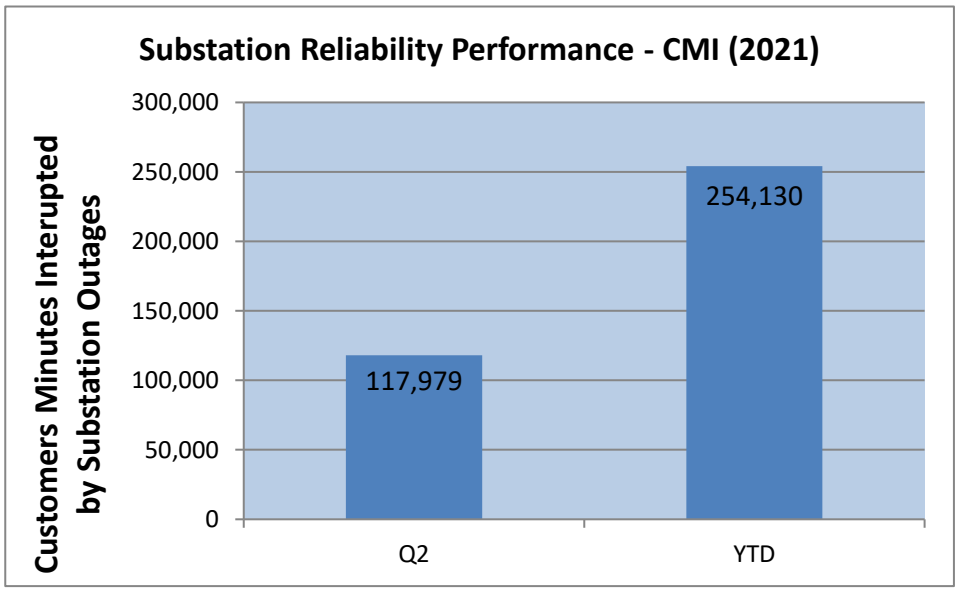


Figure 5: Substation Customer Minutes of Interruption for 2nd Quarter and Year-to-Date 2021

(f) Substation SAIFI Contribution

Overall, substation outages contributed approximately 2.7% of the total SAIFI experienced by PPL Electric customers in the 2nd quarter of 2021. Historically, PPL Electric Utilities 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 Utilities has the capability of remotely monitoring its distribution substations through SCADA installations and 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.

	2nd 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 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	63
Journeyman Lineman	159
Journeyman Lineman-Trainee	41
Helper	31
Groundhand	2
Troubleman	50
T&D Total	**346**
Electrical	
Elect Leaders-UG	2
Elect Leaders-Net	10
Elect Leaders-Sub	22
Journeyman Elect-UG	9
Journeyman Elect-Net	27
Journeyman Elect-Sub	48
Electrical Total	**118**
Overall Total	**464**

Appendix A

PPL Electric Utilities Corporation

Worst Performing Circuit Definition

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.

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.