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E-FILE

January 31, 2023

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 December 31, 2022
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 December 31, 2022. 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 January 31, 2023, which is the date it was filed electronically with the Commission's E-Filing System.

A proprietary and confidential version of this report has also been filed with the Commission on this date via overnight delivery.

If you have any questions regarding this document, please call me or Nikki Jones, PPL Electric's Senior Director – Public and Regulatory Affairs, at (717) 603-4029.

Respectfully submitted,

Kimberly A. Klock

Enclosures

cc via email: Patrick Cicero, Esquire
NazAarah Sabree
Mr. Daniel Searfoorce
Mr. Harry Bidelspach

PPL Electric Utilities Corporation

Quarterly Reliability Report

to the

Pennsylvania Public Utility Commission

January 2023

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 fourth quarter of 2022.

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 December 31, 2022.

SAIFI	BM 0.98	0.87
	STD 1.18	0.87
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	BM 145	164
	STD 174	164
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	BM 142	142
	STD 205	142
MAIFI		1.4
Average Number of Customers Served [1]		1,451,712
Number of Sustained Customer Interruptions (Trouble Cases)		23,882
Number of Customers Affected [2]		1,256,631
Customer Minutes of Interruptions (CMI)		206,385,043
Number of Customer Momentary Interruptions		2,020,520

[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.

During the fourth quarter, there were no (0) PUC major events, three (3) PUC reportable events, and five (5) other storms that required the opening of one or more area emergency centers to manage restoration efforts. Calendar year 2022 became the second highest storm count year behind only 2021. Calendar year 2022 was also the second highest year for storm cases, and the third highest year for storm customer interruptions.

Year	Non Reportable Storms	PUC Major Events	PUC Storms	Total Storms	PUC Storm Cases	PUC Storm CI	PUC Storm CI
2002	12	1	7	20	3,787	448,916	99,462,247
2003	8	4	1	13	998	82,650	14,689,512
2004	14	0	4	18	2,882	302,418	97,539,670
2005	9	1	4	14	2,088	203,184	41,309,452
2006	19	0	9	28	5,067	547,811	148,541,051
2007	22	1	5	28	3,973	427,012	98,060,819
2008	20	0	7	27	3,952	443,305	137,727,147
2009	16	0	4	20	2,692	257,598	52,777,061
2010	19	0	10	29	4,239	410,544	103,813,180
2011	24	3	6	33	3,327	382,914	111,501,018
2012	16	1	8	25	2,690	365,386	113,548,058
2013	13	0	3	16	1,112	127,021	26,326,830
2014	11	0	5	16	3,250	294,917	132,991,117
2015	19	0	1	20	1,015	167,931	28,418,978
2016	20	0	4	24	2,696	266,922	54,674,446
2017	16	0	10	26	3,000	258,504	71,286,608
2018	17	1	5	23	3,952	305,482	110,654,537
2019	16	0	10	26	5,339	409,578	131,734,085
2020	19	0	8	27	6,446	460,988	98,853,825
2021	27	0	15	42	10,230	616,913	177,625,959
2022	27	0	9	36	7,862	514,250	127,947,774

PPL Electric's fourth quarter reliability performance for SAIFI and SAIDI was within the PUC standard and benchmark. PUC CAIDI was within the PUC standard and 13% above the PUC benchmark value, largely attributable to increased storm frequency and intensity experienced in the past four quarters. Smart Grid technology and automation benefit SAIFI and SAIDI but have a negative impact on CAIDI.

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. The table below lists PPL Electric's IEEE performance metrics compared to the 2021 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 was a top decile SAIFI performer in the 2021 IEEE survey, as well as a top quartile SAIDI performer. Additionally, PPL Electric's IEEE SAIFI was the single best among the 25 large utilities participating in the survey. Large utilities are those serving one million or more customers.

	IEEE CAIDI	IEEE SAIFI	IEEE SAIDI
2019	113	0.66	74
2020	99	0.69	69
2021	124	0.68	85
2022	120	0.74	89
IEEE First Quartile Ceiling	103	0.88	100
IEEE Second Quartile Ceiling	117	1.09	139

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

The following table provides PUC reliability 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	26604	904	180	5.04	3.35	2,412	93	1,939,074
2	46001	714	162	4.4	1.64	2,363	45	1,383,076
3	47002	1,041	238	4.38	3.83	2,023	84	1,090,117
4	26603	582	126	4.62	4.96	1,591	74	777,469
5	16801	571	185	3.09	5.47	1,649	42	744,056
6	27102	1,443	274	5.27	6.41	895	48	628,469
7	25501	600	178	3.36	3.06	1,693	63	743,152
8	11506	851	233	3.65	5.96	1,303	66	626,340
9	15001	438	110	4	6.45	1,393	46	531,712
10	23401	416	150	2.77	1.84	1,734	55	679,606
11	53601	551	137	4.01	0	1,111	44	493,911
12	56501	596	219	2.73	1.6	2,360	47	831,727
13	25801	547	209	2.61	2.29	1,834	78	791,331
14	10601	762	271	2.81	1.86	1,704	71	647,986
15	10904	1,051	227	4.62	6.6	1,788	121	624,101
16	24401	488	157	3.1	1.28	1,256	53	511,545
17	11003	957	188	5.09	4.79	721	22	386,952
18	42701	411	143	2.87	0.26	1,465	79	541,638
19	46602	572	203	2.82	2.69	1,532	56	571,586
20	22404	443	123	3.61	0.57	882	22	390,598
21	51104	455	148	3.08	1.05	1,750	6	670,215
22	24703	540	169	3.2	0.22	1,620	29	572,186
23	47001	845	523	1.61	0.6	2,506	96	1,396,556
24	64201	292	102	2.88	1.94	1,906	31	540,272

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
25	53501	303	90	3.37	10.05	2,159	57	604,054
26	54202	304	135	2.25	3.83	2,113	19	620,213
27	17902	814	201	4.05	1.02	1,001	39	367,171
28	22406	794	191	4.15	3.14	990	45	436,126
29	43201	983	228	4.32	1.56	952	50	389,527
30	40201	597	222	2.7	3.88	1,674	77	470,852
31	21203	948	322	2.94	0	1,256	34	504,020
32	23902	421	234	1.8	7.84	1,491	33	577,139
33	16101	920	241	3.82	6.63	1,507	63	449,363
34	28602	552	188	2.94	2.16	1,946	40	475,032
35	20403	599	292	2.05	4.05	1,951	78	570,316
36	21601	454	244	1.86	4.47	1,729	43	543,842
37	46004	241	89	2.71	1.13	2,067	52	464,384
38	59101	364	156	2.32	1.43	1,707	40	454,734
39	64801	238	88	2.72	0.43	1,513	57	351,141
40	56802	642	270	2.38	1.98	1,529	55	612,434
41	45402	390	207	1.88	3.55	1,645	84	507,472
42	67801	257	175	1.47	0.81	2,156	22	554,125
43	13601	799	307	2.6	20.38	1,136	35	617,266
44	24502	486	213	2.28	0.58	1,121	37	447,881
45	41701	860	247	3.48	0	983	63	396,927
46	29702	783	258	3.03	6.08	838	32	518,738
47	65001	248	71	3.5	5.77	915	15	226,844
48	55001	675	221	3.05	2.34	1,254	56	323,229
49	55002	684	221	3.09	1.94	762	27	344,290
50	65702	337	239	1.41	3.28	1,926	25	585,873
51	41801	659	239	2.75	0.06	846	37	354,128
52	14304	196	75	2.62	0.77	1,839	18	360,904
53	17803	271	120	2.27	3.82	1,655	46	376,702
54	26601	357	163	2.2	0.17	1,257	49	381,326
55	54701	655	210	3.11	0.55	1,127	32	295,341
56	52402	541	221	2.45	0.32	1,695	57	386,775
57	17802	349	243	1.44	5.92	1,970	63	539,149
58	22703	260	151	1.72	0.72	1,667	15	422,202
59	21901	229	110	2.07	3.45	2,607	58	468,700
60	14302	359	160	2.25	0	1,238	8	317,943
61	16504	317	101	3.12	0.33	2,198	36	411,108
62	53102	243	56	4.34	4.52	1,239	13	218,955
63	26001	604	364	1.66	1.65	1,443	61	649,349

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

01 Circuit 26604 -- BROOKSIDE 66-04

Performance Analysis

The BROOKSIDE 66-04 circuit experienced six outages of over 100,000 CMI between January 2022 and December 2022.

On April 16, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,146 customers for up to 609 minutes resulting in 697,719 CMI.

On March 31, 2022, during a period of heavy rain, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 1,146 customers for up to 181 minutes resulting in 201,696 CMI.

On July 24, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 493 customers for up to 1,441 minutes resulting in 122,603 CMI.

On July 24, 2022, during a period of strong wind, a tree contacted an overhead transmission component causing a recloser to trip to lockout. This outage affected 105 customers for up to 1,199 minutes resulting in 125,877 CMI.

On May 16, 2022, during a period of strong wind, a tree contacted an overhead switch causing a recloser to trip to lockout. This outage affected 1,140 customers for up to 250 minutes resulting in 100,881 CMI.

On July 24, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 291 customers for up to 675 minutes resulting in 109,648 CMI.

In total, the BROOKSIDE 66-04 circuit had 93 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (48); animal contacts (21); equipment failure (18); nothing found (2); other (2); vehicles (2).

Remedial Actions

- In 2022, additional fusing was installed.
- In 2022, a Smart Grid device was installed.
- In 2022, six single-phase reclosers were installed.
- In 2022, additional animal guarding was installed.
- In 2023, three existing reclosers will be replaced with single-phase reclosers.
- In 2023, additional animal guarding will be installed.
- In 2023, numerous porcelain cutouts will be replaced.
- In 2023, a section of difficult-to-access three-phase conductor will be relocated.
- In 2023, five single-phase reclosers will be installed.

02 Circuit 46001 -- BERWICK 60-01

Performance Analysis

The BERWICK 60-01 circuit experienced four outages of over 100,000 CMI between January 2022 and December 2022.

On September 9, 2022, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 575 customers for up to 453 minutes resulting in 229,840 CMI.

On January 13, 2022, an equipment failure occurred on an overhead switch causing a transformer to be interrupted. This outage affected 2,349 customers for up to 100 minutes resulting in 164,844 CMI.

On April 8, 2022, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 576 customers for up to 230 minutes resulting in 119,691 CMI.

On January 8, 2022, 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 2,361 customers for up to 424 minutes resulting in 450,928 CMI.

In total, the BERWICK 60-01 circuit had 45 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (25); equipment failure (11); animal contacts (5); vehicles (2); nothing found (1); other (1).

Remedial Actions

- In 2022, full circuit trimming was performed.
- In 2022, additional fusing was installed.
- In 2022, several poles and cross-arms were replaced.
- In 2022, an additional single-phase recloser was installed.
- In 2023, a section of difficult-to-access conductor will be eliminated, and the downstream customers transferred to an adjacent circuit.
- In 2023, a new three-phase tie will be constructed.
- In 2023, a section of this circuit will be evaluated for reconductoring and relocation.
- In 2023, a new line and terminal will be constructed for this circuit.
- In 2024, a new single-phase tie will be constructed.

03 Circuit 47002 -- HUGHESVILLE 70-02

Performance Analysis

The HUGHESVILLE 70-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On July 24, 2022, during a period of lightning, an unidentified issue occurred with an overhead conductor causing a recloser to trip to lockout. This outage affected 625 customers for up to 507 minutes resulting in 235,955 CMI.

In total, the HUGHESVILLE 70-02 circuit had 84 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (56); equipment failure (11); vehicles (6); animal contacts (5); nothing found (5); other (1).

Remedial Actions

- In 2022, an existing recloser was replaced with a Smart Grid device.
- In 2022, an existing cutout was replaced.
- In 2023, a section of difficult-to-access single-phase will be evaluated for relocation.
- In 2024, several sections of this circuit will be storm hardened.

04 Circuit 26603 -- BROOKSIDE 66-03

Performance Analysis

The BROOKSIDE 66-03 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On September 23, 2022, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 1,491 customers for up to 137 minutes resulting in 188,548 CMI.

On September 18, 2022, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 1,001 customers for up to 112 minutes resulting in 111,211 CMI.

In total, the BROOKSIDE 66-03 circuit had 74 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (40); equipment failure (22); animal contacts (7); nothing found (3); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2022, additional animal guarding was installed.
- In 2022, ten single-phase reclosers were installed.
- In 2022, numerous porcelain cutouts were replaced.
- In 2023, additional fusing will be installed.
- In 2023, additional animal guarding will be installed.
- In 2023, an additional single-phase recloser will be installed.
- In 2023, numerous porcelain cutouts will be replaced.
- In 2025, full circuit trimming will be performed.

05 Circuit 16801 -- WAGNERS 68-01

Performance Analysis

The WAGNERS 68-01 circuit experienced three outages of over 100,000 CMI between January 2022 and December 2022.

On July 13, 2022, a contact or dig in occurred on an underground conductor causing a recloser to trip to lockout. This outage affected 1,482 customers for up to 998 minutes resulting in 113,656 CMI.

On October 7, 2022, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 730 customers for up to 349 minutes resulting in 254,653 CMI.

On September 23, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 259 customers for up to 481 minutes resulting in 107,333 CMI.

In total, the WAGNERS 68-01 circuit had 42 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (30); equipment failure (5); animal contacts (4); contact or dig in (1); nothing found (1); other (1).

Remedial Actions

- In 2022, full circuit trimming was performed.
- In 2023, additional animal guarding will be installed.
- In 2023, three single-phase reclosers will be installed.
- In 2024, additional single-phase reclosers will be installed.
- In 2024, reconductoring will be performed on a section of this circuit.
- In 2024, additional sectionalizing will be installed.
- In 2025, a single-phase tie will be constructed.

06 Circuit 27102 -- GREENFIELD 71-02

Performance Analysis

The GREENFIELD 71-02 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On September 6, 2022, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 416 customers for up to 497 minutes resulting in 145,037 CMI.

On December 16, 2022, during a period of ice/sleet/snow, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 73 customers for up to 1,501 minutes resulting in 106,526 CMI.

In total, the GREENFIELD 71-02 circuit had 48 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (22); equipment failure (11); animal contacts (9); nothing found (2); other (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2022, full circuit trimming was performed.
- In 2022, numerous porcelain cutouts were replaced.
- In 2022, several poles were replaced with more to be replaced this year.
- In 2023, three single-phase reclosers will be installed.
- In 2023, additional animal guarding will be installed.
- In 2023, several porcelain cutouts will be replaced.
- In 2024, a section of this circuit will be reconductored.

07 Circuit 25501 -- MADISONVILLE 55-01

Performance Analysis

The MADISONVILLE 55-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On July 24, 2022, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 327 customers for up to 562 minutes resulting in 183,473 CMI.

On December 1, 2022, during a period of strong wind, a tree contacted an unknown component causing a circuit breaker to trip to lockout. This outage affected 1,692 customers for up to 400 minutes resulting in 289,076 CMI.

In total, the MADISONVILLE 55-01 circuit had 63 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (29); equipment failure (17); animal contacts (13); vehicles (3); nothing found (1).

Remedial Actions

- In 2022, four poles were replaced.
- In 2022, hot spot trimming was performed.
- In 2022, two single-phase reclosers were installed.
- In 2022, three poles were replaced.
- In 2023, additional animal guarding will be installed.
- In 2023, a single-phase recloser will be installed.
- In 2023, numerous porcelain cutouts will be replaced.

08 Circuit 11506 -- FREEMANSBURG 15-06

Performance Analysis

The FREEMANSBURG 15-06 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On January 21, 2022, an equipment failure occurred on an overhead conductor. This outage affected 1,307 customers for up to 159 minutes resulting in 204,195 CMI.

In total, the FREEMANSBURG 15-06 circuit had 66 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (45); equipment failure (14); animal contacts (3); nothing found (2); vehicles (2).

Remedial Actions

- In 2022, full circuit trimming was performed.
- In 2022, additional single-phase reclosers were installed.
- In 2022, clearances were increased on a section of conductor.
- In 2023, a section of this circuit will be reconfigured.
- In 2023, a section of this circuit will be reconductored.
- In 2023, additional fusing will be installed.
- In 2024, a new substation will be built that will improve transfer capability for this circuit.
- In 2024, the circuit will be split to reduce loading.

09 Circuit 15001 -- BLUE MOUNTAIN 50-01

Performance Analysis

The BLUE MOUNTAIN 50-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On March 9, 2022, during a period of ice/sleet/snow, an equipment failure occurred on a pole or pole arm causing a recloser to trip to lockout. This outage affected 852 customers for up to 186 minutes resulting in 119,269 CMI.

In total, the BLUE MOUNTAIN 50-01 circuit had 46 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (22); equipment failure (11); animal contacts (10); nothing found (2); vehicles (1).

Remedial Actions

- In 2022, four additional single-phase reclosers were installed.
- In 2022, additional fusing was installed.
- In 2022, the protection scheme re-evaluated. Several protection settings will be revised as a result.
- In 2023, additional fusing will be installed.
- In 2023, an additional single-phase recloser will be installed.
- In 2023, additional animal guarding will be installed.
- In 2023, a pole will be replaced.

10 Circuit 23401 -- HONESDALE 34-01

Performance Analysis

The HONESDALE 34-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On August 4, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,731 customers for up to 382 minutes resulting in 312,806 CMI.

In total, the HONESDALE 34-01 circuit had 55 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (24); equipment failure (13); animal contacts (10); nothing found (6); vehicles (2).

Remedial Actions

- In 2022, additional animal guarding was installed.
- In 2023, two reclosers will be installed.
- In 2023, additional animal guarding will be installed.
- In 2024, three sections of difficult-to-access conductor will be relocated.

11 Circuit 53601 -- DALMATIA 36-01

Performance Analysis

The DALMATIA 36-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On October 15, 2022, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 322 customers for up to 361 minutes resulting in 116,045 CMI.

On January 16, 2022, during a period of ice/sleet/snow, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 152 customers for up to 745 minutes resulting in 113,221 CMI.

In total, the DALMATIA 36-01 circuit had 44 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (16); equipment failure (13); animal contacts (6); nothing found (3); vehicles (3); contact or dig in (2); other (1).

Remedial Actions

- In 2023, additional fusing will be installed.
- In 2023, a single-phase recloser will be relocated.
- In 2023, a section of three-phase will be evaluated for reconductoring.
- In 2023, a three-phase device will be upgraded to remote operability.
- In 2025, a three-phase tie will be constructed to the HUNTER circuit.

12 Circuit 56501 -- ROCKVILLE 65-01

Performance Analysis

The ROCKVILLE 65-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On August 31, 2022, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,360 customers for up to 144 minutes resulting in 187,910 CMI.

On January 24, 2022, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 1,673 customers for up to 464 minutes resulting in 501,072 CMI.

In total, the ROCKVILLE 65-01 circuit had 47 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (28); equipment failure (9); animal contacts (6); nothing found (2); other (1); vehicles (1).

Remedial Actions

- In 2022, working with the local borough, guide rail was installed to protect a pole which had previously been struck by a vehicle.
- In 2022, 547 danger trees were removed.
- In 2023, additional animal guarding will be installed.
- In 2023, a single-phase tie will be evaluated.
- In 2023, two new fuses will be installed.
- In 2023, three additional three-phase sectionalizing devices will be installed.
- In 2023, a new three-phase recloser will be evaluated.
- In 2024, full circuit trimming will be performed.
- In 2025, a three-phase tie will be installed.

13 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced three outages of over 100,000 CMI between January 2022 and December 2022.

On September 9, 2022, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 791 customers for up to 133 minutes resulting in 105,535 CMI.

On December 16, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 165 customers for up to 814 minutes resulting in 134,184 CMI.

On August 4, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 326 customers for up to 425 minutes resulting in 138,481 CMI.

In total, the SULLIVAN TRAIL 58-01 circuit had 78 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (47); equipment failure (16); animal contacts (9); vehicles (3); other (2); nothing found (1).

Remedial Actions

- In 2022, hazard tree removal was performed.
- In 2022, a Proactive Circuit Analysis was performed with several minor remediations performed.
- In 2023, additional fusing will be installed.
- In 2023, additional hazard tree removal will be evaluated.

14 Circuit 10601 -- BLOOMING GLEN 06-01

Performance Analysis

The BLOOMING GLEN 06-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On July 21, 2022, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 390 customers for up to 779 minutes resulting in 104,060 CMI.

On September 6, 2022, during a period of heavy rain, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 599 customers for up to 242 minutes resulting in 144,730 CMI.

In total, the BLOOMING GLEN 06-01 circuit had 71 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (41); animal contacts (11); equipment failure (11); nothing found (6); vehicles (2).

Remedial Actions

- In 2022, additional fusing was installed at nine locations.
- In 2022, two single-phase reclosers were installed.
- In 2022, hot spot trimming was performed.
- In 2022, a section of inaccessible conductor was re-sourced.
- In 2022, full circuit trimming was performed.
- In 2022, a section of this circuit was reconductored.
- In 2023, additional animal guarding will be installed.
- In 2023, additional fusing will be installed.
- In 2023, an additional single-phase recloser will be installed.
- In 2023, a section of conductor will be evaluated for relocation.
- In 2024, a section of this circuit will be relocated.
- In 2024, two additional multi-phase protective devices will be installed.

15 Circuit 10904 -- COOPERSBURG 09-04

Performance Analysis

The COOPERSBURG 09-04 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the COOPERSBURG 09-04 circuit had 121 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (84); animal contacts (13); equipment failure (13); nothing found (5); vehicles (5); other (1).

Remedial Actions

- In 2022, five additional single-phase reclosers were installed.
- In 2022, additional trimming was performed.
- In 2022, a section of difficult-to-access single-phase was relocated.
- In 2022, a single-phase recloser was upgraded.
- In 2022, predictive fault indicators were installed.
- In 2022, a three-phase recloser was replaced.
- In 2023, additional animal guarding will be installed.
- In 2023, a section of conductor in a heavily wooded area will be evaluated for reconductoring with covered conductor.
- In 2025, a new substation will be constructed at a new location.

16 Circuit 24401 -- TINKER 44-01

Performance Analysis

The TINKER 44-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On May 19, 2022, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,269 customers for up to 344 minutes resulting in 120,309 CMI.

In total, the TINKER 44-01 circuit had 53 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (30); animal contacts (12); equipment failure (6); nothing found (3); other (2).

Remedial Actions

- In 2022, several poles were replaced.
- In 2022, a section of difficult-to-access three-phase was relocated.
- In 2022, a new Smart Grid device was installed.
- In 2022, additional fusing was installed.
- In 2022, additional animal guarding was installed.
- In 2023, two additional single-phase reclosers will be installed.
- In 2023, a pole will be replaced.

17 Circuit 11003 -- EAST GREENVILLE 10-03

Performance Analysis

The EAST GREENVILLE 10-03 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On August 14, 2022, a tree contacted a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 721 customers for up to 403 minutes resulting in 114,511 CMI.

In total, the EAST GREENVILLE 10-03 circuit had 22 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (15); equipment failure (5); animal contacts (1); nothing found (1).

Remedial Actions

- In 2022, the transmission line that feeds East Greenville received tree trimming.
- In 2022, a new Smart Grid device was installed.
- In 2023, additional fusing will be installed.
- In 2023, covered conductor will be evaluated for this circuit.
- In 2024, the transmission line that feeds East Greenville substation will be rebuilt.

18 Circuit 42701 -- AUGUSTAVILLE 27-01

Performance Analysis

The AUGUSTAVILLE 27-01 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the AUGUSTAVILLE 27-01 circuit had 79 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (47); equipment failure (16); animal contacts (15); vehicles (1).

Remedial Actions

- In 2022, an additional single-phase recloser was installed.
- In 2022, a section of difficult-to-access conductor was relocated.
- In 2023, a section of conductor will be evaluated for storm hardening.
- In 2023, a Proactive Circuit Analysis will be performed.
- In 2023, additional animal guarding will be installed at seven locations.
- In 2023 five locations will receive fusing.

19 Circuit 46602 -- LARRYS CREEK 66-02

Performance Analysis

The LARRYS CREEK 66-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On March 10, 2022, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 836 customers for up to 376 minutes resulting in 292,052 CMI.

In total, the LARRYS CREEK 66-02 circuit had 56 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (29); equipment failure (13); animal contacts (6); nothing found (5); vehicles (2); other (1).

Remedial Actions

- In 2022, two additional single-phase reclosers were installed.
- In 2023, several porcelain cutouts will be replaced.
- In 2023, additional animal guarding will be installed.
- In 2023, an additional single-phase recloser will be installed.
- In 2023, additional fusing will be installed.
- In 2024, full circuit trimming will be performed.

20 Circuit 22404 -- MORGAN 24-04

Performance Analysis

The MORGAN 24-04 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On May 25, 2022, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,810 customers for up to 211 minutes resulting in 256,847 CMI.

In total, the MORGAN 24-04 circuit had 22 outages between January 2022 and December 2022, with the causes breaking down as follows: equipment failure (13); tree related (6); animal contacts (2); vehicles (1).

Remedial Actions

- In 2022, additional animal guarding was installed.
- In 2023, two single-phase reclosers will be installed.
- In 2023, seven additional locations will receive animal guarding.
- In 2024, full circuit trimming will be performed.

21 Circuit 51104 -- CARLISLE 11-04

Performance Analysis

The CARLISLE 11-04 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On May 17, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,756 customers for up to 405 minutes resulting in 573,850 CMI.

In total, the CARLISLE 11-04 circuit had 6 outages between January 2022 and December 2022, with the causes breaking down as follows: animal contacts (2); equipment failure (2); tree related (1); vehicles (1).

Remedial Actions

- In 2022, one fuse was installed.
- In 2023, additional fusing will be installed.
- In 2023, reconfiguration will be evaluated for a section of three-phase.
- In 2023, a three-phase sectionalizing device will be replaced.
- In 2023, an additional three-phase sectionalizing device will be evaluated.

22 Circuit 24703 -- FREELAND 47-03

Performance Analysis

The FREELAND 47-03 circuit experienced three outages of over 100,000 CMI between January 2022 and December 2022.

On August 4, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 414 customers for up to 627 minutes resulting in 186,858 CMI.

On August 4, 2022, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 297 customers for up to 367 minutes resulting in 108,987 CMI.

On March 24, 2022, during a period of heavy rain, a tree contacted an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 416 customers for up to 506 minutes resulting in 102,796 CMI.

In total, the FREELAND 47-03 circuit had 29 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (13); animal contacts (5); equipment failure (5); nothing found (2); vehicles (2); Improper Design (1); other (1).

Remedial Actions

- In 2022, full circuit trimming was performed.
- In 2022, hazard tree removal was performed.
- In 2022, a section of single-phase was extended.
- In 2022, an existing section of line was split into two sections with tie capability.
- In 2022, an existing Smart Grid device was replaced.
- In 2022, an additional single-phase recloser was installed.
- In 2023, a single-phase recloser will be installed.

- In 2023, a large single-phase tap will be transferred to an adjacent circuit.
- In 2023, 12 new fuses will be installed.
- In 2023, the circuit protection settings will be optimized.
- In 2025, a three-phase tie to the ST JOHNS 30-02 will be constructed.

23 Circuit 47001 -- HUGHESVILLE 70-01

Performance Analysis

The HUGHESVILLE 70-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On March 31, 2022, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,238 customers for up to 1,284 minutes resulting in 1,142,804 CMI.

In total, the HUGHESVILLE 70-01 circuit had 96 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (61); animal contacts (13); equipment failure (13); vehicles (5); nothing found (4).

Remedial Actions

- In 2022, additional single-phase reclosers were installed.
- In 2022, voltage regulators were installed.
- In 2022, full circuit trimming was performed.
- In 2023, additional animal guarding will be installed.
- In 2024, a section of single-phase will be relocated to underground.

24 Circuit 64201 -- KINZER 42-01

Performance Analysis

The KINZER 42-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On November 1, 2022, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 344 customers for up to 529 minutes resulting in 124,528 CMI.

On March 12, 2022, during a period of ice/sleet/snow, an equipment failure occurred on an overhead switch causing a circuit breaker to trip to lockout. This outage affected 2,751 customers for up to 131 minutes resulting in 138,910 CMI.

In total, the KINZER 42-01 circuit had 31 outages between January 2022 and December 2022, with the causes breaking down as follows: equipment failure (11); tree related (11); vehicles (5); animal contacts (2); nothing found (2).

Remedial Actions

- In 2022, an existing tie switch was replaced with a Smart Grid device.
- In 2022, additional animal guarding was installed.
- In 2022, additional fusing was installed.
- In 2023, additional fusing will be installed at two locations.
- In 2023, a single-phase tie will be evaluated.
- In 2023, resourcing a section of conductor will be evaluated.
- In 2023, several poles will be evaluated for relocation.
- In 2024, full circuit trimming will be performed.

25 Circuit 53501 -- ELIZABETHVILLE 35-01

Performance Analysis

The ELIZABETHVILLE 35-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On December 22, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 563 customers for up to 241 minutes resulting in 135,683 CMI.

In total, the ELIZABETHVILLE 35-01 circuit had 57 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (29); equipment failure (17); animal contacts (6); vehicles (3); nothing found (2).

Remedial Actions

- In 2022, eight single-phase reclosers were installed.
- In 2023, a single-phase recloser will be installed.
- In 2023, fusing will be installed at two locations.
- In 2023, additional three-phase sectionalizing devices will be evaluated.

26 Circuit 54202 -- PENNSBORO 42-02

Performance Analysis

The PENNSBORO 42-02 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On June 1, 2022, during a period of heavy rain, an unidentified issue occurred causing a recloser to trip to lockout. This outage affected 505 customers for up to 762 minutes resulting in 127,086 CMI.

On February 6, 2022, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 1,357 customers for up to 575 minutes resulting in 224,792 CMI.

In total, the PENNSBORO 42-02 circuit had 19 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (10); equipment failure (4); animal contacts (3); other (1); vehicles (1).

Remedial Actions

- In 2022, full circuit trimming was performed.
- In 2022, settings on a three-phase device were optimized for coordination.
- In 2023, additional fusing will be installed.
- In 2025, a three-phase sectionalizing device will be installed.

27 Circuit 17902 -- BARTONSVILLE 79-02

Performance Analysis

The BARTONSVILLE 79-02 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the BARTONSVILLE 79-02 circuit had 39 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (19); animal contacts (10); equipment failure (5); nothing found (2); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In 2022, two single-phase reclosers were installed.
- In 2022, several poles were replaced.
- In 2023, additional animal guarding will be installed.
- In 2023, a single-phase tie will be constructed.

- In 2023, one section of three-phase will be reconductored.
- In 2023, full circuit trimming will be performed.

28 Circuit 22406 -- MORGAN 24-06

Performance Analysis

The MORGAN 24-06 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On December 16, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 148 customers for up to 955 minutes resulting in 141,322 CMI.

In total, the MORGAN 24-06 circuit had 45 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (21); equipment failure (10); animal contacts (9); nothing found (3); contact or dig in (1); other (1).

Remedial Actions

- In 2022, 127 hazard trees were removed.
- In 2022, additional animal guarding was installed.
- In 2023, numerous porcelain cutouts will be replaced.
- In 2023 a section of underground cable will be installed.
- In 2023, additional fusing will be installed.
- In 2023, additional reclosers will be installed.
- In 2023, numerous porcelain cutouts will be replaced.
- In 2024, a new Smart Grid device will be installed.
- In 2024, a section of this line will be extended.

29 Circuit 43201 -- MILLVILLE 32-01

Performance Analysis

The MILLVILLE 32-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On June 18, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 262 customers for up to 510 minutes resulting in 102,081 CMI.

On August 6, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 490 customers for up to 655 minutes resulting in 113,417 CMI.

In total, the MILLVILLE 32-01 circuit had 50 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (32); animal contacts (8); equipment failure (7); nothing found (3).

Remedial Actions

- In 2022, a section of difficult-to-access conductor was relocated.
- In 2022, two additional single-phase reclosers were installed.
- In 2023, a section of single-phase will be evaluated for additional sectionalizing.
- In 2023, full circuit trimming will be performed.
- In 2024, a section of conductor will be relocated to underground.
- In 2024, a section of three-phase conductor will be reconductored and storm hardened.

30 Circuit 40201 -- BEAR GAP 02-01

Performance Analysis

The BEAR GAP 02-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On December 22, 2022, during a period of heavy rain, an equipment failure occurred on an overhead switch causing a recloser to trip to lockout. This outage affected 1,675 customers for up to 300 minutes resulting in 111,615 CMI.

In total, the BEAR GAP 02-01 circuit had 77 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (40); animal contacts (16); equipment failure (16); nothing found (3); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2022, a section of conductor in a heavily wooded area was undergrounded.
- In 2022, a section of single-phase conductor was relocated.
- In 2022, approximately 150 hazard trees were removed.
- In 2023, a three-phase recloser will be replaced.
- In 2023, a section of difficult-to-access conductor will be evaluated for relocation.

31 Circuit 21203 -- EAST CARBONDALE 12-03

Performance Analysis

The EAST CARBONDALE 12-03 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the EAST CARBONDALE 12-03 circuit had 34 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (16); equipment failure (12); nothing found (4); animal contacts (1); vehicles (1).

Remedial Actions

- In 2023, additional animal guarding will be installed.
- In 2023, numerous porcelain cutouts will be replaced.
- In 2023, additional single-phase reclosers will be installed.
- In 2023, a section of line will be reconductored.

32 Circuit 23902 -- EFFORT MOUNTAIN 39-02

Performance Analysis

The EFFORT MOUNTAIN 39-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On December 17, 2022, a vehicle contact caused a recloser to trip to lockout. This outage affected 779 customers for up to 637 minutes resulting in 214,246 CMI.

In total, the EFFORT MOUNTAIN 39-02 circuit had 33 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (20); animal contacts (9); vehicles (2); equipment failure (1); nothing found (1).

Remedial Actions

- In 2022, hazard tree removal was performed.
- In 2022, several poles were replaced.
- In 2022, a section of conductor was extended.
- In 2022, a three-phase capacitor bank was replaced.
- In 2023, additional animal guarding will be installed.

- In 2023, numerous porcelain cutouts will be replaced.

33 Circuit 16101 -- BINGEN 61-01

Performance Analysis

The BINGEN 61-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On January 28, 2022, during a period of ice/sleet/snow, an equipment failure occurred on an overhead transformer causing an interruption. This outage affected 949 customers for up to 110 minutes resulting in 104,462 CMI.

In total, the BINGEN 61-01 circuit had 63 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (41); animal contacts (10); equipment failure (8); nothing found (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2023, additional single-phase reclosers will be evaluated.
- In 2023, full circuit trimming will be performed.
- In 2023, additional animal guarding will be installed.
- In 2023, a new recloser will be evaluated for this circuit.
- In 2023, relocating a section of conductor will be evaluated.

34 Circuit 28602 -- BLYTHEBURN 86-02

Performance Analysis

The BLYTHEBURN 86-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On February 4, 2022, during a period of ice/sleet/snow, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 746 customers for up to 583 minutes resulting in 165,980 CMI.

In total, the BLYTHEBURN 86-02 circuit had 40 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (23); animal contacts (6); equipment failure (6); vehicles (4); nothing found (1).

Remedial Actions

- In 2022, additional animal guarding was installed.
- In 2022, an additional Smart Grid device was installed.
- In 2022, a Proactive Circuit Analysis was performed with several minor remediations performed.
- In 2022, hazard tree removal was performed.
- In 2023, three single-phase reclosers will be installed.
- In 2024, full circuit trimming will be performed.
- In 2024, two single-phase ties will be constructed with five additional reclosers added.
- In 2025, a three-phase tie line will be constructed.

35 Circuit 20403 -- ASHFIELD 04-03

Performance Analysis

The ASHFIELD 04-03 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On June 7, 2022, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 153 customers for up to 691 minutes resulting in 104,529 CMI.

In total, the ASHFIELD 04-03 circuit had 78 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (48); animal contacts (11); equipment failure (9); nothing found (5); vehicles (5).

Remedial Actions

- In 2022, a single-phase recloser was installed.
- In 2022, approximately seven miles of this circuit received tree trimming.
- In 2023, a section of difficult-to-access single-phase will be relocated.
- In 2023, five single-phase reclosers will be installed.
- In 2023, a single-phase tie will be constructed to the ASHFIELD 01 circuit.
- In 2023, a section of conductor will be evaluated for relocation.
- In 2024, two sections of difficult-to-access conductor will be relocated.

36 Circuit 21601 -- EYNON 16-01

Performance Analysis

The EYNON 16-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On February 4, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,516 customers for up to 274 minutes resulting in 276,439 CMI.

In total, the EYNON 16-01 circuit had 43 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (17); animal contacts (11); equipment failure (10); nothing found (2); vehicles (2); other (1).

Remedial Actions

- In 2023, full circuit trimming will be performed.
- In 2023, additional animal guarding will be installed.
- In 2023, additional fusing will be installed.
- In 2023, several cutouts will be replaced.
- In 2024, a section of difficult-to-access conductor will be relocated.

37 Circuit 46004 -- BERWICK 60-04

Performance Analysis

The BERWICK 60-04 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On April 2, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,167 customers for up to 218 minutes resulting in 108,382 CMI.

In total, the BERWICK 60-04 circuit had 52 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (26); animal contacts (9); equipment failure (9); nothing found (5); other (2); vehicles (1).

Remedial Actions

- In 2022, additional fusing was installed.
- In 2023, additional fusing will be installed.
- In 2023, an additional single-phase Smart Grid device will be installed.
- In 2024, full circuit trimming will be performed.
- In 2024, three single-phase reclosers will be installed.

38 Circuit 59101 -- WALKER 91-01

Performance Analysis

The WALKER 91-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On January 12, 2022, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 1,132 customers for up to 136 minutes resulting in 142,913 CMI.

On May 25, 2022, an unidentified issue occurred with an underground conductor causing a recloser to trip to lockout. This outage affected 1,135 customers for up to 133 minutes resulting in 150,841 CMI.

In total, the WALKER 91-01 circuit had 40 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (23); equipment failure (11); animal contacts (3); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In 2022, a section of difficult-to-access conductor was relocated.
- In 2022 a targeted infrared patrol was performed. A minor anomaly was identified and corrected.
- In 2023, two animal guards will be installed.
- In 2023, additional fusing will be installed.
- In 2023, a new three-phase recloser will be installed.
- In 2023, a section of single-phase will be evaluated for reconductoring.
- In 2025, full circuit trimming will be performed.

39 Circuit 64801 -- MOUNT NEBO 48-01

Performance Analysis

The MOUNT NEBO 48-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On July 2, 2022, during a period of heavy rain, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,511 customers for up to 448 minutes resulting in 124,942 CMI.

In total, the MOUNT NEBO 48-01 circuit had 57 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (26); animal contacts (13); equipment failure (10); nothing found (4); vehicles (3); contact or dig in (1).

Remedial Actions

- In 2022, four single-phase reclosers were installed.
- In 2022, a section of three-phase conductor was relocated.
- In 2023, multiple sections of single-phase will be evaluated for reconfiguration.
- In 2023, multiple sections of single-phase will be evaluated for reconductoring.
- In 2025, full circuit trimming will be performed.

40 Circuit 56802 -- BENVENUE 68-02

Performance Analysis

The BENVENUE 68-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On June 16, 2022, during a period of lightning, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 456 customers for up to 1,101 minutes resulting in 501,805 CMI.

In total, the BENVENUE 68-02 circuit had 55 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (30); equipment failure (11); animal contacts (6); other (4); nothing found (3); vehicles (1).

Remedial Actions

- In 2022, additional fusing was installed.
- In 2022, a section of single-phase was relocated and reconfigured.
- In 2022, two single-phase reclosers were installed.
- In 2023, relocating a section of three-phase conductor will be evaluated.
- In 2023, a single-phase tie line will be evaluated.
- In 2023, full circuit trimming will be performed.
- In 2025, a section of single-phase will be relocated to underground.

41 Circuit 45402 -- WEST BLOOMSBURG 54-02

Performance Analysis

The WEST BLOOMSBURG 54-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On April 24, 2022, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 287 customers for up to 469 minutes resulting in 134,468 CMI.

In total, the WEST BLOOMSBURG 54-02 circuit had 84 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (63); animal contacts (9); equipment failure (9); nothing found (1); other (1); vehicles (1).

Remedial Actions

- In 2022, six single-phase reclosers were installed.
- In 2022, full circuit trimming was performed.
- In 2023, additional sectionalizing will be evaluated.
- In 2023, a single-phase tie will be evaluated.
- In 2023, additional animal guarding will be installed.
- In 2023, additional fusing will be installed.
- In 2023, a section of difficult-to-access conductor will be relocated to underground.
- In 2023, an additional single-phase recloser will be installed.
- In 2024, additional reconductoring and storm hardening will be performed.

42 Circuit 67801 -- WEST LANCASTER 78-01

Performance Analysis

The WEST LANCASTER 78-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On July 1, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,143 customers for up to 271 minutes resulting in 481,975 CMI.

In total, the WEST LANCASTER 78-01 circuit had 22 outages between January 2022 and December 2022, with the causes breaking down as follows: equipment failure (8); tree related (7); animal contacts (3); vehicles (2); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2022, a new three-phase tie was constructed.
- In 2022, a section of single-phase was reconductored.
- In 2022, full circuit trimming was performed.
- In 2022, two additional single-phase reclosers were installed.
- In 2022, two sections of single-phase were relocated.
- In 2022, two sections of single-phase were re-sourced.
- In 2023, three single-phase reclosers will be installed.
- In 2023, additional animal guarding will be installed.
- In 2024, ten additional sectionalizing devices will be installed.
- In 2024, a substation conversion will be performed.
- In 2024, several sections of single-phase will be storm hardened.
- In 2025, a new three-phase sectionalizing device will be installed.

43 Circuit 13601 -- RICHLAND 36-01

Performance Analysis

The RICHLAND 36-01 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On November 12, 2022, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 222 customers for up to 817 minutes resulting in 177,011 CMI.

On December 24, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 164 customers for up to 970 minutes resulting in 130,751 CMI.

In total, the RICHLAND 36-01 circuit had 35 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (22); animal contacts (5); equipment failure (4); vehicles (2); nothing found (1); other (1).

Remedial Actions

- In 2022, hazard tree removal was performed.
- In 2022, a pole was replaced.
- In 2022, a single-phase recloser was installed.
- In 2023, several poles will be replaced.
- In 2023, additional fusing will be installed.
- In 2023, relocation will be evaluated for a section of difficult-to-access conductor.
- In 2023, aerial cable will be evaluated for a section of this circuit.

44 Circuit 24502 -- GOULDSBORO 45-02

Performance Analysis

The GOULDSBORO 45-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On October 15, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 565 customers for up to 281 minutes resulting in 158,635 CMI.

In total, the GOULDSBORO 45-02 circuit had 37 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (25); equipment failure (7); animal contacts (4); vehicles (1).

Remedial Actions

- In 2022, additional animal guarding was installed.
- In 2022, three poles were replaced.
- In 2022, a single-phase recloser was installed.
- In 2023, additional animal guarding will be installed.
- In 2023, a section of this circuit will be reconductored.

45 Circuit 41701 -- LOGANTON 17-01

Performance Analysis

The LOGANTON 17-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On May 7, 2022, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 990 customers for up to 164 minutes resulting in 161,617 CMI.

In total, the LOGANTON 17-01 circuit had 63 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (40); animal contacts (11); equipment failure (9); nothing found (2); contact or dig in (1).

Remedial Actions

- In 2022, a new transformer was installed at the substation.
- In 2022, additional animal guarding was installed.
- In 2022, additional fusing was installed.
- In 2024, an additional Smart Grid device will be installed.

46 Circuit 29702 -- ANGELS 91-02

Performance Analysis

The ANGELS 91-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On June 18, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 160 customers for up to 1,040 minutes resulting in 166,292 CMI.

In total, the ANGELS 91-02 circuit had 32 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (17); animal contacts (9); equipment failure (3); vehicles (3).

Remedial Actions

- In 2022, two single-phase reclosers were installed.
- In 2023, additional animal guarding will be installed.
- In 2023, additional single-phase reclosers will be installed.

- In 2023, several poles will be replaced or relocated.

47 Circuit 65001 -- NEFFSVILLE 50-01

Performance Analysis

The NEFFSVILLE 50-01 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the NEFFSVILLE 50-01 circuit had 15 outages between January 2022 and December 2022, with the causes breaking down as follows: equipment failure (10); nothing found (3); vehicles (2).

Remedial Actions

- In 2023, an underground three-phase tie will be upgraded.
- In 2023, new three-phase sectionalizing devices will be evaluated.
- In 2023, a fault current analysis will be performed.
- In 2025, full circuit trimming will be performed.

48 Circuit 55001 -- NEWPORT 50-01

Performance Analysis

The NEWPORT 50-01 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the NEWPORT 50-01 circuit had 56 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (28); equipment failure (16); animal contacts (11); nothing found (1).

Remedial Actions

- In 2022, a 2.1-mile section of three-phase conductor in a heavily wooded area was relocated.
- In 2022, three fuses were installed.
- In 2022, a section of single-phase was reconductored.
- In 2022, 75 hazard trees were removed.
- In 2023, a single-phase tie will be evaluated.
- In 2023, an additional three-phase sectionalizing device will be installed.
- In 2023, a section of single-phase will be resourced.
- In 2025, a section of single-phase will be reconductored.

49 Circuit 55002 -- NEWPORT 50-02

Performance Analysis

The NEWPORT 50-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On March 9, 2022, during a period of ice/sleet/snow, an equipment failure occurred on a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 764 customers for up to 147 minutes resulting in 111,620 CMI.

In total, the NEWPORT 50-02 circuit had 27 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (18); equipment failure (5); animal contacts (2); vehicles (2).

Remedial Actions

- In 2022, a single-phase recloser was installed.
- In 2022, an additional animal guard was installed.
- In 2022, a section of three-phase was inspected by drone, with several minor remediations completed.
- In 2023, a new three-phase sectionalizing device will be evaluated.
- In 2023, two single-phase ties will be evaluated.
- In 2023, a three-phase tie will be evaluated.
- In 2024, full circuit trimming will be performed.

50 Circuit 65702 -- ROSEVILLE 57-02

Performance Analysis

The ROSEVILLE 57-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On October 1, 2022, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 1,102 customers for up to 550 minutes resulting in 382,529 CMI.

In total, the ROSEVILLE 57-02 circuit had 25 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (10); equipment failure (8); animal contacts (5); nothing found (1); vehicles (1).

Remedial Actions

- In 2022, a three-phase sectionalizing device was installed.
- In 2023, three fuses will be installed.
- In 2023, a section of single-phase will be resourced.
- In 2023, animal guarding in rear-lot areas will be evaluated.

- In 2023, a single-phase recloser will be installed.
- In 2024, full circuit trimming will be performed.
- In 2025, a three-phase recloser will be installed.

51 Circuit 41801 -- GOWEN CITY 18-01

Performance Analysis

The GOWEN CITY 18-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On November 19, 2022, an equipment failure occurred on an overhead splice causing a load break disconnect switch to be interrupted. This outage affected 845 customers for up to 515 minutes resulting in 243,745 CMI.

In total, the GOWEN CITY 18-01 circuit had 37 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (12); animal contacts (11); equipment failure (8); nothing found (6).

Remedial Actions

- In 2022, an infrared drone scan was performed with several minor remediations implemented.
- In 2022, a pole was replaced.
- In 2023, two poles will be replaced.
- In 2023, two transformer cutouts will be replaced.

52 Circuit 14304 -- SUMNER 43-04

Performance Analysis

The SUMNER 43-04 circuit experienced two outages of over 100,000 CMI between January 2022 and December 2022.

On May 24, 2022, a vehicle contact caused a circuit breaker to trip to lockout. This outage affected 1,484 customers for up to 363 minutes resulting in 117,257 CMI.

On October 13, 2022, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 265 customers for up to 526 minutes resulting in 104,319 CMI.

In total, the SUMNER 43-04 circuit had 18 outages between January 2022 and December 2022, with the causes breaking down as follows: equipment failure (6); animal contacts (4); tree related (4); vehicles (3); nothing found (1).

Remedial Actions

- In 2023, additional fusing will be installed.
- In 2023, the protection settings on this circuit will be reviewed.
- In 2023, single-phase reclosers will be evaluated for this circuit.
- In 2023, a substation transformer will be replaced.
- In 2023, a cross arm will be replaced.
- In 2023, additional animal guarding will be installed.
- In 2023, a section of underground cable will be evaluated for replacement.
- In 2024, full circuit trimming will be performed.

53 Circuit 17803 -- GILBERT 78-03

Performance Analysis

The GILBERT 78-03 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the GILBERT 78-03 circuit had 46 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (24); animal contacts (9); equipment failure (9); vehicles (3); Improper Operation (1).

Remedial Actions

- In 2022, three poles were replaced.
- In 2022, two single-phase reclosers were installed.
- In 2022, a Smart Grid device was replaced.
- In 2022, numerous porcelain cutouts were replaced.
- In 2022, full circuit trimming was performed.
- In 2023, additional animal guarding will be installed.
- In 2023, three single-phase reclosers will be installed.

54 Circuit 26601 -- BROOKSIDE 66-01

Performance Analysis

The BROOKSIDE 66-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On July 24, 2022, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 183 customers for up to 685 minutes resulting in 103,166 CMI.

In total, the BROOKSIDE 66-01 circuit had 49 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (31); equipment failure (8); animal contacts (7); nothing found (2); vehicles (1).

Remedial Actions

- In 2022, a section of difficult-to-access conductor was relocated.
- In 2022, additional animal guarding was installed.
- In 2023, several cutouts will be installed.
- In 2023, additional fusing will be installed.
- In 2023, several cutouts will be installed.
- In 2023, additional hazard tree removal will be evaluated.
- In 2024, a section of difficult-to-access conductor will be relocated.

55 Circuit 54701 -- NEW BLOOMFIELD 47-01

Performance Analysis

The NEW BLOOMFIELD 47-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On June 16, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 111 customers for up to 1,651 minutes resulting in 159,098 CMI.

In total, the NEW BLOOMFIELD 47-01 circuit had 32 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (24); equipment failure (5); nothing found (2); animal contacts (1).

Remedial Actions

- In 2022, three additional fuses were installed.
- In 2022, five single-phase reclosers were installed.
- In 2022, an additional sectionalizing device was installed.
- In 2022, hazard tree removal was performed.
- In 2023, a single-phase tie will be evaluated.
- In 2023, additional fusing will be installed.
- In 2023, a section of single-phase will be reconfigured.
- In 2023, relocating a section of single-phase will be evaluated.
- In 2025, two sections of single-phase will be relocated underground.

56 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On June 9, 2022, during a period of heavy rain, a tree contacted an overhead conductor causing a load break fuse to operate. This outage affected 1,158 customers for up to 267 minutes resulting in 113,664 CMI.

In total, the GREEN PARK 24-02 circuit had 57 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (32); animal contacts (13); equipment failure (7); vehicles (3); nothing found (1); other (1).

Remedial Actions

- In 2022, full circuit trimming was performed.
- In 2022, two additional single-phase reclosers were installed.
- In 2022, a section of single-phase was relocated.
- In 2022, a section of single-phase was reconductored.
- In 2022, two sections of single-phase were re-sourced.
- In 2023, additional animal guarding will be installed.
- In 2023, a new battery storage installation will be installed.
- In 2023, three single-phase reclosers will be installed.
- In 2024, ten additional sectionalizing devices will be installed.
- In 2024, a substation conversion will be performed.
- In 2024, several sections of single-phase will be storm hardened.

57 Circuit 17802 -- GILBERT 78-02

Performance Analysis

The GILBERT 78-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On June 18, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 621 customers for up to 344 minutes resulting in 213,127 CMI.

In total, the GILBERT 78-02 circuit had 63 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (30); equipment failure (14); animal contacts (12); vehicles (3); nothing found (2); other (2).

Remedial Actions

- In 2022, a single-phase recloser was installed.
- In 2022, full circuit trimming was performed.
- In 2022, hot spot trimming was performed.
- In 2022, several poles were replaced or relocated.
- In 2023, additional animal guarding will be installed.
- In 2023, two sections of difficult-to-access single-phase will be relocated.

58 Circuit 22703 -- MINOOKA 27-03

Performance Analysis

The MINOOKA 27-03 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On September 2, 2022, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 1,667 customers for up to 503 minutes resulting in 338,886 CMI.

In total, the MINOOKA 27-03 circuit had 15 outages between January 2022 and December 2022, with the causes breaking down as follows: equipment failure (6); tree related (5); animal contacts (2); vehicles (2).

Remedial Actions

- In 2022, additional animal guarding was installed.
- In 2022, a targeted line patrol was performed with several minor remediations performed.
- In 2023, additional animal guarding will be installed.
- In 2023, switching improvements will be evaluated.
- In 2023, several pole replacements will be evaluated.

59 Circuit 21901 -- HUMBOLDT 19-01

Performance Analysis

The HUMBOLDT 19-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On January 11, 2022, during a period of extreme temperatures, a vehicle contact occurred causing an interruption. This outage affected 2,600 customers for up to 563 minutes resulting in 154,841 CMI.

In total, the HUMBOLDT 19-01 circuit had 58 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (28); equipment failure (12); animal contacts (11); vehicles (4); other (2); nothing found (1).

Remedial Actions

- In 2022, a single-phase tie was constructed.
- In 2022, an existing three-phase recloser was upgraded to remote operability.
- In 2023, a single-phase tie to the GIRARD MANOR 24-01 will be constructed.
- In 2023, thirty-three additional fuses will be installed.
- In 2023, eleven additional reclosers will be installed.

60 Circuit 14302 -- SUMNER 43-02

Performance Analysis

The SUMNER 43-02 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On April 2, 2022, a vehicle contacted a pole causing an interruption. This outage affected 1,233 customers for up to 796 minutes resulting in 245,958 CMI.

In total, the SUMNER 43-02 circuit had 8 outages between January 2022 and December 2022, with the causes breaking down as follows: animal contacts (3); equipment failure (3); other (1); vehicles (1).

Remedial Actions

- In 2023, full circuit trimming will be performed.
- In 2023, the load on a section of this circuit will be split.
- In 2023, a substation transformer will be replaced.
- In 2025, a transrupter at the substation will be replaced.

61 Circuit 16504 -- STROUDSBURG 65-04

Performance Analysis

The STROUDSBURG 65-04 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On March 19, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 2,198 customers for up to 553 minutes resulting in 207,515 CMI.

In total, the STROUDSBURG 65-04 circuit had 36 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (17); equipment failure (8); animal contacts (5); nothing found (3); other (3).

Remedial Actions

- In 2022, several poles were replaced.
- In 2022, two single-phase reclosers were installed.
- In 2023, additional animal guarding will be installed.
- In 2023, several poles will be replaced.
- In 2023, several cutouts will be replaced.
- In 2023, additional tree trimming will be performed.

62 Circuit 53102 -- WILLIAMSTOWN 31-02

Performance Analysis

The WILLIAMSTOWN 31-02 circuit experienced no outages of over 100,000 CMI between January 2022 and December 2022.

In total, the WILLIAMSTOWN 31-02 circuit had 13 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (8); animal contacts (2); contact or dig in (1); equipment failure (1); vehicles (1).

Remedial Actions

- In 2022, animal guarding was installed.
- In 2023, full circuit trimming will be performed.
- In 2023, additional fusing will be installed.
- In 2023, additional sectionalizing will be evaluated.
- In 2023, additional disconnects will be installed.
- In 2023, additional animal guarding will be installed.

63 Circuit 26001 -- WEST DAMASCUS 60-01

Performance Analysis

The WEST DAMASCUS 60-01 circuit experienced one outage of over 100,000 CMI between January 2022 and December 2022.

On July 24, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 99 customers for up to 1,244 minutes resulting in 117,518 CMI.

In total, the WEST DAMASCUS 60-01 circuit had 61 outages between January 2022 and December 2022, with the causes breaking down as follows: tree related (30); equipment failure (15); animal contacts (11); nothing found (3); other (1); vehicles (1).

Remedial Actions

- In 2022, two additional single-phase reclosers with downstream fusing were installed.
- In 2022, several poles and cross-arms were replaced.
- In 2022, additional fusing was installed.
- In 2023, full circuit trimming will be performed.
- In 2023, additional animal guarding will be installed.
- In 2023, several poles will be replaced.

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

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

Cause Description	Trouble Cases	Percent of Trouble Cases	Customer Interruptions	Percent of Customer Interruptions	Customer Minutes	Percent of Customer Minutes
Animals	4,317	18.1%	84,480	6.7%	5,417,193	2.6%
Contact / Dig-In	162	0.7%	14,550	1.2%	1,140,639	0.6%
Directed by Non-PPL Authority	62	0.3%	5,464	0.4%	387,252	0.2%
Equipment Failures	5,727	24.0%	299,406	23.8%	32,545,324	15.8%
Improper Design	-	0.0%	-	0.0%	-	0.0%
Improper Installation	3	0.0%	92	0.0%	5,753	0.0%
Improper Operation	2	0.0%	859	0.1%	48,189	0.0%
Nothing Found	966	4.0%	59,760	4.8%	6,131,204	3.0%
Other Controllable	61	0.3%	11,113	0.9%	748,923	0.4%
Other Non-Control	181	0.8%	16,301	1.3%	1,328,304	0.6%
Other Public	25	0.1%	2,923	0.2%	296,898	0.1%
Tree Related	11,552	48.4%	630,045	50.1%	143,657,997	69.6%
Unknown	-	0.0%	-	0.0%	-	0.0%
Vehicles	824	3.5%	131,638	10.5%	14,677,367	7.1%
Total	**23,882**	**100.0%**	**1,256,631**	**100.0%**	**206,385,043**	**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 50% of cases, 57% of customer interruptions, and 75% 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 79% of the cases of trouble, 81% of the customer interruptions and 90% 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 74% 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 37% of the cases of trouble, 43% 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	4th Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of poles)	54	13	13	54	54
Transmission arm replacements (# of arms)	40	12	12	40	40
Transmission air break switch inspections (# of switches)	1	0	0	1	1
Transmission surge arrester installations (# of sets)	541	0	0	541	541
Transmission structure inspections (# of activities)	15,988	958	958	8,627	8,627
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	563	0	45	563	563
Transmission reclearing (# of miles) 69 kV	1004	156	216	1004	1004
Transmission reclearing (# of miles) 138 kV	57	0	0	57	57
Transmission danger tree removals-Bulk Power (# of trees)	N/A				
Substation					
Substation batteries (# of activities)	386	96	84	386	417
Circuit breakers (# of activities)	423	106	28	423	36
Substation inspections (# of activities)	1,862	465	445	1,862	1,624
Transformer maintenance (# of activities)	126	32	53	126	112

Inspection & Maintenance Goals/Objectives	Annual Budget	4th Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	1,238	310	396	1,238	1,845
C-truss distribution poles (# of poles)	1,438	350	386	1,400	1,438
Capacitor (MVAR added)	N/A	11.3	11.3	39.9	39.9
OCR Replacements (# of)	0	0	0	0	2
Distribution pole inspections (# of poles)	64,370	15,000	10,054	64,370	56,625
Distribution line inspections (miles)	2,200	0	0	2,200	2,200
Group re-lamping (# of lamps)	24,100	12,050	0	24,100	0
Test sections of underground distribution cable	N/A	417	417	649	649
Distribution tree trimming (# of miles)	4,288	982	1,159	4,288	4,314
Distribution herbicide (# of acres)	N/A	66	66	422	422
Distribution >18” removals within R/W (# of trees)	N/A	1,181	1,181	4,422	4,422
Distribution hazard tree removals outside R/W (# of trees)	N/A				7,412
LTN manhole inspections (# of)	326	0	0	326	163
LTN vault inspections (# of)	361	0	0	361	107
LTN network protector overhauls (# of)	84	0	0	84	17
LTN reverse power trip testing (# of)	28	0	0	28	5

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 which includes the work identified in response to Item (6).

Activity		4th Quarter		Year-to-date	
	2022 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
Provide Electric Service	5,799	1,473	1,741	5,799	7,477
Vegetation Management	33,292	6,607	16,932	33,292	47,690
Customer Response	60,906	14,020	15,277	60,906	71,546
Reliability Maintenance	21,217	3,784	4,909	21,217	25,187
System Upgrade	3,870	935	70	3,870	543
Customer Service/Accounts	109,576	30,705	40,632	109,576	141,940
Others	63,970	15,944	23,912	63,970	74,760
Total O&M Expenses	**298,629**	**73,468**	**103,473**	**298,629**	**369,143**

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 which includes transmission and distribution ("T&D") activities.

Activity	4th Quarter			Year-to-date	
	2022 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
New Service/Revenue	92,169	21,988	29,713	92,169	118,071
System Upgrade	205,389	30,740	61,894	205,389	215,325
Reliability & Maintenance	500,801	108,682	104,949	502,132	453,725
Customer Response	34,262	6,743	16,574	34,262	50,467
Other	27,172	4,828	16,046	27,172	31,191
Total	**859,793**	**172,980**	**229,176**	**861,124**	**868,779**

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 4th quarter of 2022, 51 corrective work orders were created with the following breakdown by priority.

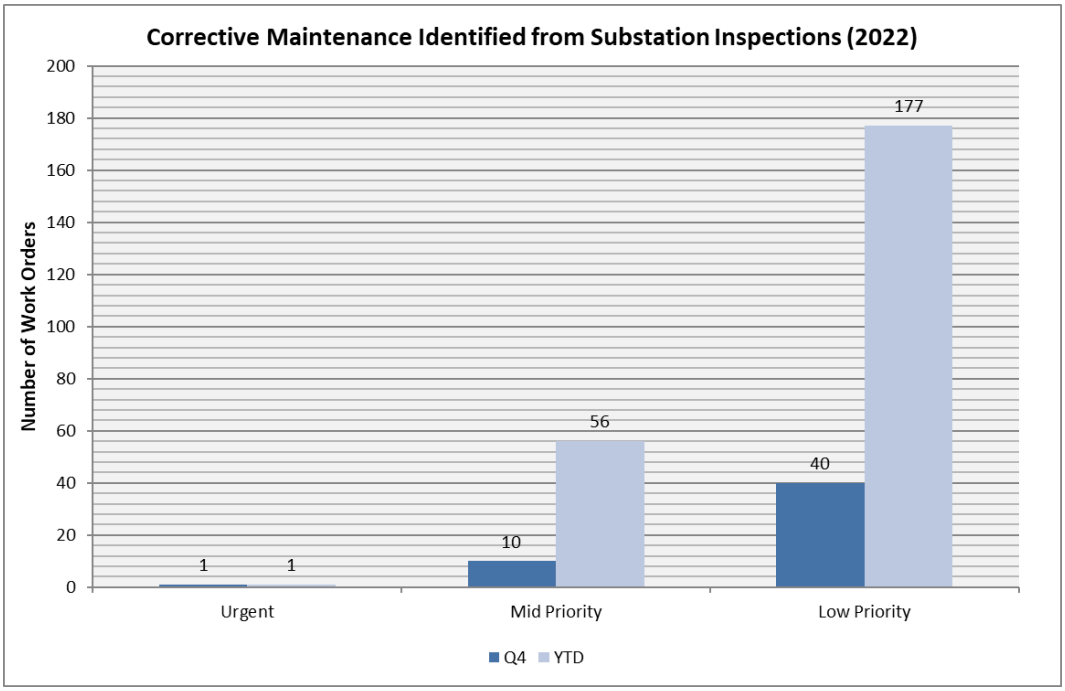

Figure 1: Corrective Maintenance Work Orders by Priority Level for 4th Quarter and Year-to-Date 2022

(b) The Amount Spent on Substation Inspections

During the 4th quarter of 2022, PPL Electric Utilities spent approximately $207,000 on substation inspections.

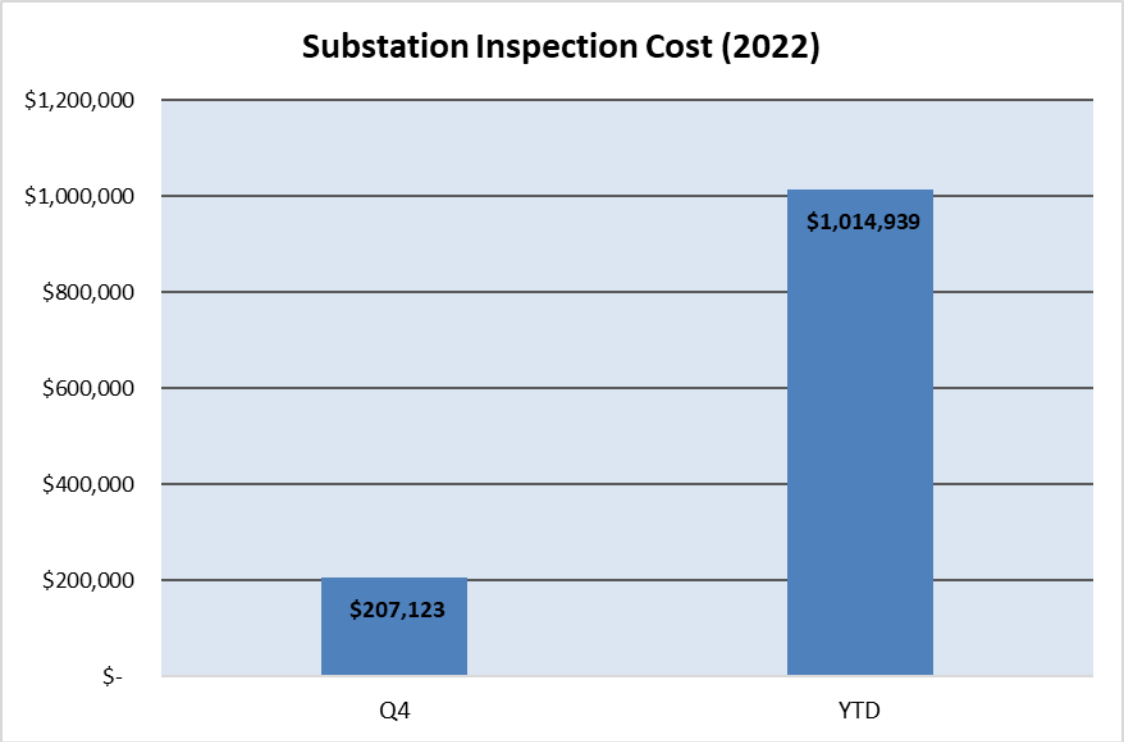

Figure 2: Substation Inspection Costs for 4th Quarter and Year-to-Date 2022

(c) The Amount Spent on Vegetation Management

Please refer to Section 7 for vegetation management expenses for the 4th quarter and year-to-date in 2022.

(d) The Projected CMI Avoidance Due to Substation Inspections

Figure 3 below shows the CMI avoidance that PPL Electric Utilities has estimated for the 4th quarter and year-to-date. During the 4th quarter of 2022, PPL Electric Utilities avoided a projected 178,000 CMI.

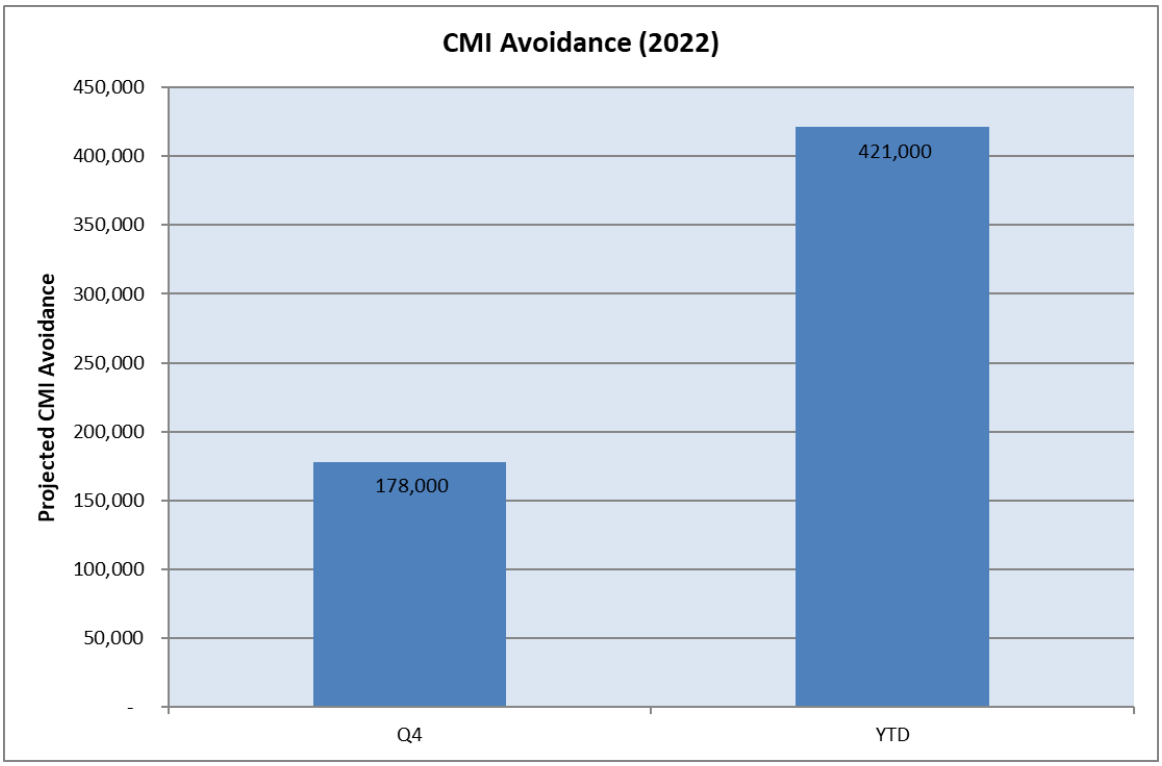

Figure 3: Projected CMI Avoidance Due to Substation Inspections for 4th Quarter and Year-to-Date 2022

(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 4th quarter of 2022, the Company interrupted approximately 34,000 customers for a total of 1,281,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.

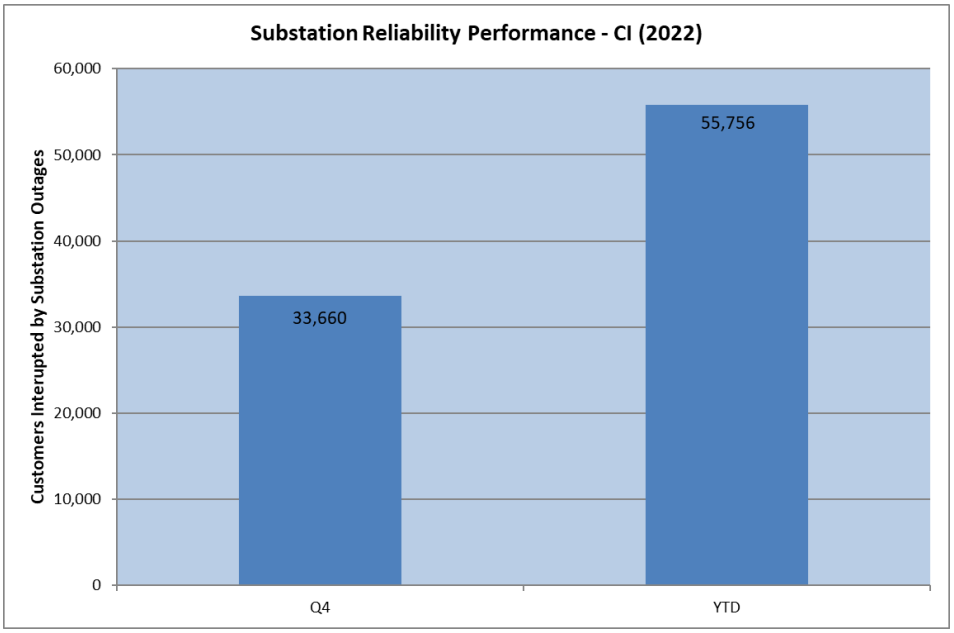

Figure 4: Substation Customers Interrupted for 4th Quarter and Year-to-Date 2022

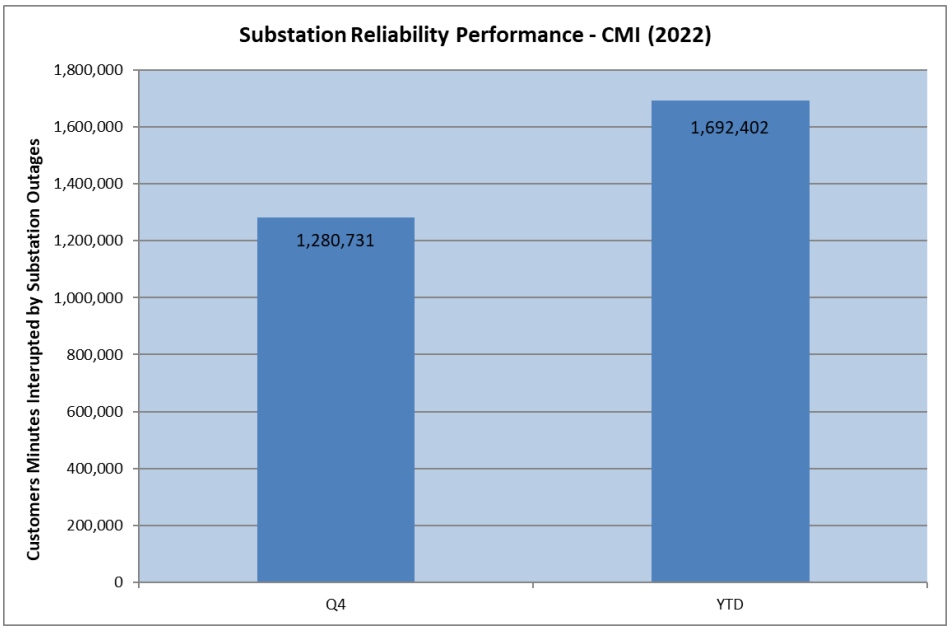

Figure 5: Substation Customer Minutes of Interruption for 4th Quarter and Year-to-Date 2022

(f) Substation SAIFI Contribution

Overall, substation outages contributed approximately 0.36% of the total SAIFI experienced by PPL Electric customers in the 4th quarter of 2022. 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.

	4th 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.

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	66
Journeyman Lineman	148
Journeyman Lineman-Trainee	70
Helper	46
Groundhand	1
Troubleman	48
T&D Total	**379**
Electrical	
Elect Leaders-UG	1
Elect Leaders-Net	9
Elect Leaders-Sub	18
Journeyman Elect-UG	6
Journeyman Elect-Net	26
Journeyman Elect-Sub	41
Electrical Total	**101**
Overall Total	**480**

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.