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E-FILE

November 1, 2022

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 September 30, 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 September 30, 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 November 1, 2022, 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,

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

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

October 2022

- 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 third 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 September 30, 2022.

SAIFI	BM 0.98	082
	STD 1.18	0.82
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	BM 145	153
	STD 174	153
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	BM 142	125
	STD 205	125
MAIFI		1.5
Average Number of Customers Served ¹		1,449,312
Number of Sustained Customer Interruptions (Trouble Cases)		23,537
Number of Customers Affected ²		1,186,299
Customer Minutes of Interruptions (CMI)		181,028,691
Number of Customer Momentary Interruptions		2,224,024

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 third quarter, there were no (0) PUC major events, two (2) PUC reportable events, and ten (10) other storms that required the opening of one or more area emergency centers to manage restoration efforts. Calendar year 2021 set records for: the most PUC Storms (15); most total storms (42); and most non-excludable storm cases, customers, and minutes. As of September 30th, 2022 is trending to be the second highest storm count year behind only 2021.

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 through 9/30	22	0	6	28	5,133	323,319	78,192,709

PPL Electric’s third quarter reliability performance for SAIFI and SAIDI was within the PUC standard and benchmark. PUC CAIDI was within the PUC standard and 6% 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.

Compared to the second quarter of 2022, PUC SAIFI has improved by 15%, CAIDI by 20%, and SAIDI by 32%.

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 2020 performance quartiles for large utilities nationally, as issued by the IEEE annual reliability survey³. This survey comprises some 100 utilities serving 85 million customers across the country.

	IEEE CAIDI	IEEE SAIFI	IEEE SAIDI
2019	113	0.66	74
2020	99	0.69	69
2021	124	0.68	85
Rolling 12 Months Ending 9/30/2022	120	0.72	86
IEEE First Quartile Ceiling	98	0.82	84
IEEE Second Quartile Ceiling	108	1.06	103

³ Quartile cutoffs are expected to be revised upward for 2021.

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	816	182	4.49	1.5	2,416	128	1,973,288
2	47704	498	95	5.24	1.3	1,393	107	694,278
3	46001	312	135	2.31	0.8	2,360	68	737,130
4	11506	494	136	3.64	3.1	1,304	77	644,682
5	26603	382	112	3.40	3.7	1,592	82	608,930
6	15001	365	138	2.64	13.1	1,393	53	575,803
7	47002	312	109	2.86	3.4	2,021	92	631,174
8	23401	416	145	2.88	2.0	1,731	70	720,369
9	53601	306	70	4.40	0.7	1,115	54	341,308
10	10601	286	118	2.42	2.3	1,728	91	494,998
11	17803	284	129	2.19	4.6	1,649	71	469,543
12	29402	392	180	2.18	0.9	1,711	56	672,400
13	11003	685	244	2.80	3.6	720	21	493,522
14	27102	733	195	3.77	2.4	896	56	656,869
15	16801	488	165	2.96	4.1	1,652	54	806,553
16	28602	191	117	1.64	1.0	1,950	65	372,926
17	43201	477	140	3.40	0.0	951	77	454,210
18	56501	354	128	2.76	0.9	2,360	50	837,252
19	24401	399	198	2.01	0.0	1,264	64	504,615
20	51104	245	133	1.84	1.0	1,751	9	430,162
21	46602	384	165	2.33	2.0	1,564	62	601,065
22	47001	541	158	3.43	0.1	2,511	135	1,359,388
23	22404	494	164	3.01	0.6	883	21	436,390
24	55001	991	203	4.88	6.7	1,259	91	1,248,726

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
25	20402	859	470	1.83	2.1	1,623	50	1,395,704
26	10904	354	139	2.54	2.0	1,761	126	624,194
27	25801	295	169	1.75	0.9	1,837	75	543,624
28	46506	303	189	1.61	1.9	1,631	59	495,355
29	21203	269	111	2.42	0.0	1,256	37	338,105
30	21206	284	163	1.74	0.9	2,470	27	703,024
31	54701	311	171	1.82	0.1	1,125	51	349,969
32	22703	194	123	1.57	1.4	1,665	19	324,644
33	45402	415	193	2.15	3.1	1,647	133	684,851
34	59301	448	338	1.32	0.0	1,459	46	654,811
35	17802	303	165	1.84	2.5	1,969	103	597,263
36	46004	277	193	1.43	0.6	2,061	45	571,288
37	59101	174	117	1.49	1.3	1,716	54	299,284
38	28804	275	148	1.86	0.7	1,118	49	308,136
39	17902	392	171	2.30	0.6	998	41	392,141
40	21601	266	140	1.89	3.6	1,734	60	462,507
41	64201	291	175	1.66	2.2	1,900	34	553,321
42	29702	608	190	3.20	3.4	835	51	507,691
43	21901	253	326	0.78	3.4	2,609	103	661,704
44	67801	302	188	1.61	1.2	2,154	19	650,914
45	52402	250	122	2.05	0.3	1,694	108	423,717
46	26601	247	105	2.36	0.0	1,315	53	325,021
47	24703	278	122	2.27	0.1	1,621	24	452,110
48	26001	329	139	2.36	0.6	1,439	90	474,352
49	27101	296	100	2.95	2.7	1,836	73	545,092
50	25501	219	145	1.51	1.7	1,692	67	372,225
51	15604	342	151	2.27	4.3	1,391	85	476,333
52	64801	269	96	2.81	0.4	1,513	75	408,497
53	22406	262	79	3.31	1.2	984	62	258,333
54	55401	444	146	3.04	1.0	689	8	306,589
55	56802	383	92	4.15	0.9	1,536	94	588,693
56	41701	365	193	1.89	1.0	987	61	360,541
57	26704	400	206	1.94	2.2	926	41	370,758
58	54202	227	98	2.31	3.5	2,113	31	480,410
59	16504	174	92	1.90	0.1	2,190	33	382,383
60	29202	394	195	2.02	3.1	1,221	44	481,796
61	42701	354	225	1.58	0.3	1,466	92	519,896
62	46802	214	82	2.62	0.0	1,952	99	417,884
63	41901	431	83	5.17	11.2	725	35	313,102

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 five outages of over 100,000 CMI between October 2021 and September 2022.

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

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

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 July 7, 2021, during a period of heavy rain, a tree contacted an overhead conductor causing a sectionalizing device to be interrupted. This outage affected 985 customers for up to 147 minutes resulting in 144,795 CMI.

In total, the BROOKSIDE 66-04 circuit had 128 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (79); equipment failure (23); animal contacts (14); nothing found (7); vehicles (3); other (2).

Remedial Actions

- In 2021, additional animal guarding was installed.
- In 2021, hazard tree removal was performed.
- In 2022, additional fusing was installed with more to be performed.
- In 2022, six single-phase reclosers will be installed.
- In 2022, three existing reclosers will be replaced with single-phase reclosers.
- In 2022, additional animal guarding will be installed.
- In 2022, reconductoring will be evaluated for a section of conductor.
- In 2022, additional hazard tree removal will be performed.
- In 2022, the protection settings on this circuit will be evaluated and optimized.
- In 2022, an additional line and terminal and tie line will be evaluated.

- 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 47704 -- BLOOMSBURG 77-04

Performance Analysis

The BLOOMSBURG 77-04 circuit experienced seven outages of over 100,000 CMI between October 2021 and September 2022.

On October 28, 2021, during a period of strong wind, an equipment failure occurred on an overhead conductor causing a temporary open point to be interrupted. This outage affected 268 customers for up to 1,690 minutes resulting in 137,560 CMI.

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

On November 26, 2021, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 206 customers for up to 681 minutes resulting in 140,286 CMI.

On July 12, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 253 customers for up to 538 minutes resulting in 122,232 CMI.

On September 15, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 277 customers for up to 525 minutes resulting in 109,719 CMI.

On February 19, 2022, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 254 customers for up to 496 minutes resulting in 108,723 CMI.

On December 2, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 407 customers for up to 406 minutes resulting in 165,237 CMI.

In total, the BLOOMSBURG 77-04 circuit had 107 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (68); equipment failure (18); animal contacts (14); nothing found (4); other (2); vehicles (1).

Remedial Actions

- In 2021, two single-phase reclosers were installed.
- In 2022, a new substation was constructed.
- In 2022, five single-phase reclosers were installed.
- In 2022, a section of line will be reconducted.
- In 2022, an additional Smart Grid device will be installed.
- In 2022, a section of single-phase conductor will be relocated.
- In 2022, a new three-phase tie will be constructed.
- In 2022, additional fusing will be installed.
- In 2022, additional sectionalizing capability will be added to this circuit.
- In 2022, additional animal guarding will be installed.
- In 2022, additional hazard tree removal will be performed.
- In 2023, a section of conductor in a heavily wooded area will be rebuilt and storm hardened.

03 Circuit 46001 -- BERWICK 60-01

Performance Analysis

The BERWICK 60-01 circuit experienced five outages of over 100,000 CMI between October 2021 and September 2022.

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.

On July 11, 2021, during a period of heavy rain, an equipment failure occurred on an overhead splice causing a recloser to trip to lockout. This outage affected 941 customers for up to 203 minutes resulting in 190,637 CMI.

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

On 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.

In total, the BERWICK 60-01 circuit had 68 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (42); equipment failure (13); animal contacts (7); nothing found (6).

Remedial Actions

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

04 Circuit 11506 -- FREEMANSBURG 15-06

Performance Analysis

The FREEMANSBURG 15-06 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On November 18, 2021, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 211 customers for up to 577 minutes resulting in 105,238 CMI.

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 77 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (49); equipment failure (16); animal contacts (6); vehicles (3); nothing found (2); contact or dig in (1).

Remedial Actions

- In 2021, five additional single-phase reclosers were installed.
- In 2021, additional fusing was installed.
- In 2022, full circuit trimming was performed.
- In 2022, additional single-phase reclosers were installed.
- In 2022, a section of this circuit will be reconfigured.
- In 2022, a section of this circuit will be reconductored.
- In 2022, additional fusing will be installed.
- In 2022, clearances will be increased on a section of conductor.
- 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.

05 Circuit 26603 -- BROOKSIDE 66-03

Performance Analysis

The BROOKSIDE 66-03 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the BROOKSIDE 66-03 circuit had 82 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (51); equipment failure (22); animal contacts (5); other (2); contact or dig in (1); nothing found (1).

Remedial Actions

- In 2021, numerous porcelain cutouts were replaced.
- In 2022, additional animal guarding will be installed.
- In 2022, eleven single-phase reclosers will be installed.
- In 2022, numerous porcelain cutouts will be replaced.
- In 2022, additional fusing will be installed.
- In 2023, additional animal guarding will be installed.
- In 2023, numerous porcelain cutouts will be replaced.

06 Circuit 15001 -- BLUE MOUNTAIN 50-01

Performance Analysis

The BLUE MOUNTAIN 50-01 circuit experienced three outages of over 100,000 CMI between October 2021 and September 2022.

On September 2, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 253 customers for up to 680 minutes resulting in 171,948 CMI.

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.

On December 12, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,273 customers for up to 168 minutes resulting in 185,128 CMI.

In total, the BLUE MOUNTAIN 50-01 circuit had 53 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (26); equipment failure (13); animal contacts (11); nothing found (2); vehicles (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, additional animal guarding was installed.
- In 2022, five additional single-phase reclosers were installed with one more to be installed this year.
- In 2022, additional fusing will be installed.
- In 2022, protection scheme reconfiguration will be evaluated.
- In 2022, resizing fuses and additional serial fusing will be evaluated.
- In 2022, an infrared scan will be performed.
- In 2023, a section of single-phase will be replaced.

07 Circuit 47002 -- HUGHESVILLE 70-02

Performance Analysis

The HUGHESVILLE 70-02 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the HUGHESVILLE 70-02 circuit had 92 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (62); equipment failure (12); animal contacts (7); nothing found (6); vehicles (3); contact or dig in (1); other (1).

Remedial Actions

- In 2021, an additional sectionalizing device was installed.
- In 2021, a section of difficult-to-access conductor was relocated.
- In 2021, additional animal guarding was installed.
- In 2021, additional fusing was installed.
- In 2021, an additional single-phase recloser was installed.
- In 2022, an existing recloser was replaced with a Smart Grid device.
- In 2022, a section of difficult-to-access conductor will be relocated to underground.
- In 2022, a section of difficult-to-access single-phase will be evaluated for relocation.
- In 2022, several sections of this circuit will be evaluated for storm hardening.
- In 2022, an existing cutout will be replaced.

08 Circuit 23401 -- HONESDALE 34-01

Performance Analysis

The HONESDALE 34-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the HONESDALE 34-01 circuit had 70 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (34); equipment failure (16); animal contacts (12); nothing found (5); other (2); vehicles (1).

Remedial Actions

- In 2022, additional animal guarding will be 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.

09 Circuit 53601 -- DALMATIA 36-01

Performance Analysis

The DALMATIA 36-01 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

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.

On October 13, 2021, an unidentified issue occurred with an overhead conductor causing a recloser to trip to lockout. This outage affected 754 customers for up to 209 minutes resulting in 126,167 CMI.

In total, the DALMATIA 36-01 circuit had 54 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (20); equipment failure (15); animal contacts (8); nothing found (8); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In 2021, a section of single-phase line was relocated.
- In 2022, additional fusing will be installed.
- In 2022, a three-phase tie will be evaluated.
- In 2022, seventeen additional fuses will be evaluated.
- In 2022, a section of single-phase will be evaluated for resourcing.
- In 2022, a section of three-phase will be evaluated for reconductoring.
- In 2023, a three-phase device will be upgraded to remote operability.

10 Circuit 10601 -- BLOOMING GLEN 06-01

Performance Analysis

The BLOOMING GLEN 06-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the BLOOMING GLEN 06-01 circuit had 91 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (57); animal contacts (13); equipment failure (13); nothing found (6); vehicles (2).

Remedial Actions

- In 2022, additional fusing was installed at nine locations with more to be performed.
- 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 re-conducted.
- In 2022, additional animal guarding will be installed.
- In 2022, an infrared scan will be performed.
- In 2023, an additional single-phase recloser will be installed.
- In 2024, a section of this circuit will be relocated.
- In 2024, two additional multi-phase protective devices will be installed.

11 Circuit 17803 -- GILBERT 78-03

Performance Analysis

The GILBERT 78-03 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On October 30, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 579 customers for up to 384 minutes resulting in 161,354 CMI.

In total, the GILBERT 78-03 circuit had 71 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (42); equipment failure (14); animal contacts (11); vehicles (3); Improper Operation (1).

Remedial Actions

- In 2021, additional animal guarding was performed.
- In 2021, additional fusing was installed.
- In 2021, 10 poles were replaced.
- In 2021, several sections of conductor were relocated and re-conducted.
- In 2021, numerous porcelain cutouts were replaced.
- In 2021, a drone inspection was performed with several minor remediations implemented.
- In 2022, three poles were replaced.
- In 2022, a Smart Grid device was replaced.
- In 2022, full circuit trimming was performed.
- In 2022, additional animal guarding will be installed.
- In 2022 and 2023, five single-phase reclosers will be installed.

12 Circuit 29402 -- BELTZVILLE 69/12 KV 94-02

Performance Analysis

The BELTZVILLE 69/12 KV 94-02 circuit experienced four outages of over 100,000 CMI between October 2021 and September 2022.

On July 3, 2021, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,384 customers for up to 284 minutes resulting in 310,228 CMI.

On November 12, 2021, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 468 customers for up to 246 minutes resulting in 109,671 CMI.

On July 2, 2021, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 895 customers for up to 143 minutes resulting in 127,993 CMI.

On October 26, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 424 customers for up to 278 minutes resulting in 100,579 CMI.

In total, the BELTZVILLE 69/12 KV 94-02 circuit had 56 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (30); equipment failure (13); animal contacts (6); vehicles (4); nothing found (3).

Remedial Actions

- In 2021, two dissimilar metal connections were remediated.
- In 2022, hot spot trimming and hazard tree removal was performed.
- In 2022, a Proactive Circuit Analysis was completed with several minor remediations implemented.
- In 2022, additional fusing was added at eight locations.
- In 2022, two reclosers were installed to split a tap into separate branches.
- In 2022, a new tie line to the Carbon Substation will be evaluated.
- In 2022, a three-phase tie to the WEISSPORT 75-03 line will be evaluated.
- In 2023, full circuit trimming will be performed.
- In 2024, a section of difficult-to-access three-phase conductor will be relocated.
- In 2024, a section of multi-phase conductor will be rebuilt.

13 Circuit 11003 -- EAST GREENVILLE 10-03

Performance Analysis

The EAST GREENVILLE 10-03 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the EAST GREENVILLE 10-03 circuit had 21 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (12); equipment failure (7); nothing found (1); vehicles (1).

Remedial Actions

- In 2022, the transmission line that feeds East Greenville was received tree trimming.
- In 2022, a Proactive Circuit Analysis will be conducted.
- In 2022, additional single-phase reclosers will be evaluated.
- In 2022, the addition of a three-phase recloser will be evaluated.
- In 2023, a section of line will be re-sourced.
- In 2024, the transmission line that feeds East Greenville substation will be rebuilt.

14 Circuit 27102 -- GREENFIELD 71-02

Performance Analysis

The GREENFIELD 71-02 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the GREENFIELD 71-02 circuit had 56 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (30); equipment failure (12); nothing found (7); animal contacts (4); vehicles (2); other (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2021, additional animal guarding was installed.
- In 2022, three single-phase reclosers were installed with three more planned for this year.
- In 2022, several poles were replaced with more to be replaced this year.
- In 2022 and 2023, additional animal guarding will be installed.
- In 2023, several porcelain cutouts will be replaced.

15 Circuit 16801 -- WAGNERS 68-01

Performance Analysis

The WAGNERS 68-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On October 18, 2021, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 727 customers for up to 421 minutes resulting in 127,530 CMI.

In total, the WAGNERS 68-01 circuit had 54 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (30); animal contacts (11); equipment failure (10); nothing found (2); other (1).

Remedial Actions

- In 2022, full circuit trimming will be performed.
- In 2022, additional animal guarding will be installed.
- In 2022, an additional single-phase recloser will be installed.
- In 2023, two single-phase reclosers will be installed.
- In 2024, additional single-phase reclosers will be installed.

16 Circuit 28602 -- BLYTHEBURN 86-02

Performance Analysis

The BLYTHEBURN 86-02 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On July 27, 2021, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 294 customers for up to 737 minutes resulting in 117,617 CMI.

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 65 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (46); equipment failure (9); animal contacts (6); vehicles (2); nothing found (1); other (1).

Remedial Actions

- In 2021, a section of three-phase was reconductored.
- In 2021, nine single-phase reclosers were installed.
- In 2022, additional animal guarding was installed.

- In 2022, a substation upgrade will be performed.
- In 2022, three single-phase reclosers will be installed.
- In 2022, an additional Smart Grid device will be installed.
- In 2022, a three-phase tie line will be evaluated.
- In 2022, a Proactive Circuit Analysis will be performed.
- In 2022, hazard tree removal will be evaluated.
- In 2022, a three-phase tie will be evaluated for reconductoring.
- In 2024, full circuit trimming will be performed.
- In 2024, two single-phase ties will be constructed with five additional reclosers added.

17 Circuit 43201 -- MILLVILLE 32-01

Performance Analysis

The MILLVILLE 32-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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.

In total, the MILLVILLE 32-01 circuit had 77 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (55); equipment failure (10); nothing found (7); animal contacts (3); other (1); vehicles (1).

Remedial Actions

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

18 Circuit 56501 -- ROCKVILLE 65-01

Performance Analysis

The ROCKVILLE 65-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

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 50 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (28); animal contacts (10); equipment failure (6); nothing found (2); vehicles (2); contact or dig in (1); other (1).

Remedial Actions

- In 2021, a section of single-phase was reconnected.
- In 2021, a section of line was re-sourced.
- In 2021, a single-phase tie was installed.
- In 2021, four single-phase reclosers were installed.
- 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, additional animal guarding will be installed.
- In 2022, a single-phase tie will be evaluated.
- In 2022, two new fuses will be installed.
- In 2022, an additional three-phase sectionalizing device will be evaluated.
- In 2022, additional danger tree removal will be performed.
- In 2023, full circuit trimming will be performed.
- In 2023, a three-phase tie will be installed.
- In 2023, additional animal guarding will be installed.
- In 2023, three additional three-phase sectionalizing devices will be installed.

19 Circuit 24401 -- TINKER 44-01

Performance Analysis

The TINKER 44-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 64 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (31); animal contacts (16); equipment failure (9); nothing found (5); other (2); vehicles (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, several poles were replaced.
- In 2022, a section of difficult-to-access three-phase was relocated.
- In 2022, additional fusing will be installed.
- In 2022, additional animal guarding will be installed.
- In 2023, two additional single-phase reclosers will be installed.

20 Circuit 51104 -- CARLISLE 11-04

Performance Analysis

The CARLISLE 11-04 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 9 outages between October 2021 and September 2022, with the causes breaking down as follows: animal contacts (4); tree related (3); other (1); vehicles (1).

Remedial Actions

- In 2021, three fuses were installed.
- In 2022, one fuse was installed.
- In 2022, one fuse will be installed.

21 Circuit 46602 -- LARRYS CREEK 66-02

Performance Analysis

The LARRYS CREEK 66-02 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 62 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (39); animal contacts (8); nothing found (7); equipment failure (5); vehicles (2); other (1).

Remedial Actions

- In 2022, two additional single-phase reclosers were installed.
- In 2022, several porcelain cutouts will be replaced.
- In 2022, 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.

22 Circuit 47001 -- HUGHESVILLE 70-01

Performance Analysis

The HUGHESVILLE 70-01 circuit experienced three outages of over 100,000 CMI between October 2021 and September 2022.

On August 13, 2021, during a period of strong wind, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 833 customers for up to 602 minutes resulting in 130,480 CMI.

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.

On July 7, 2021, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 590 customers for up to 459 minutes resulting in 130,642 CMI.

In total, the HUGHESVILLE 70-01 circuit had 135 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (82); equipment failure (27); animal contacts (18); nothing found (5); vehicles (2); contact or dig in (1).

Remedial Actions

- In 2021, addition fusing was installed.
- In 2021, several transformer cutouts were replaced.
- In 2021, a single-phase recloser was relocated.
- In 2022, additional single-phase reclosers were installed.
- In 2022, voltage regulators were installed.
- In 2022, full circuit trimming will be performed.
- In 2022, additional animal guarding will be installed.
- In 2024, a section of single-phase will be relocated to underground.

23 Circuit 22404 -- MORGAN 24-04

Performance Analysis

The MORGAN 24-04 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 21 outages between October 2021 and September 2022, with the causes breaking down as follows: equipment failure (12); animal contacts (6); vehicles (2); tree related (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.

24 Circuit 55001 -- NEWPORT 50-01

Performance Analysis

The NEWPORT 50-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On November 26, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 226 customers for up to 454 minutes resulting in 102,389 CMI.

In total, the NEWPORT 50-01 circuit had 91 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (56); equipment failure (22); animal contacts (8); nothing found (3); vehicles (2).

Remedial Actions

- In 2021, an additional single-phase recloser was installed.
- In 2021, three additional fuses were installed.
- 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 will be removed.
- In 2022, 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 2024, a section of single-phase will be reconductored.

25 Circuit 20402 -- ASHFIELD 04-02

Performance Analysis

The ASHFIELD 04-02 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On November 28, 2021, an unidentified issue occurred with an overhead conductor causing a recloser to trip to lockout. This outage affected 1,209 customers for up to 258 minutes resulting in 151,517 CMI.

On June 12, 2022, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 1,411 customers for up to 687 minutes resulting in 291,290 CMI.

In total, the ASHFIELD 04-02 circuit had 50 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (18); equipment failure (12); animal contacts (10); nothing found (3); other (3); vehicles (2); contact or dig in (1); Improper Operation (1).

Remedial Actions

- In 2022, a section of difficult-to-access conductor was relocated.
- In 2022, a section of underground conductor was extended.
- In 2022, a large section of single-phase was rebuilt as three-phase and relocated to a more accessible location.
- In 2022, a section of conductor was transferred to an adjacent circuit.
- In 2022, two additional single-phase reclosers will be installed, with additional downstream fusing.
- In 2022, a new tie line will be evaluated.
- In 2022, full circuit trimming will be performed.

26 Circuit 10904 -- COOPERSBURG 09-04

Performance Analysis

The COOPERSBURG 09-04 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On December 12, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 627 customers for up to 255 minutes resulting in 116,296 CMI.

In total, the COOPERSBURG 09-04 circuit had 126 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (83); animal contacts (20); equipment failure (16); nothing found (7).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, five additional single-phase reclosers were installed.
- In 2022, a section of difficult-to-access single-phase was relocated.
- In 2022, a single-phase recloser will be upgraded.
- In 2022, a three-phase recloser will be replaced.
- In 2022, additional trimming will be performed.
- In 2022, a protection review of the circuit will be performed.
- In 2022, a section of conductor in a heavily wooded area will be evaluated for reconductoring with covered conductor.
- In 2023, two additional single-phase reclosers will be installed.

27 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On July 13, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 790 customers for up to 256 minutes resulting in 144,185 CMI.

In total, the SULLIVAN TRAIL 58-01 circuit had 75 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (50); equipment failure (13); animal contacts (6); nothing found (2); other (2); contact or dig in (1); vehicles (1).

Remedial Actions

- In 2021, three additional single-phase reclosers were installed.
- In 2021, a section of three-phase was reconductored.
- In 2021, a section of three-phase conductor was extended.
- In 2021, full circuit trimming was performed.
- In 2022, a Proactive Circuit Analysis will be performed.
- In 2022, additional fusing and single-phase sectionalizing will be evaluated.
- In 2022, additional hazard tree removal will be evaluated.

28 Circuit 46506 -- LOCK HAVEN 65-06

Performance Analysis

The LOCK HAVEN 65-06 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On October 9, 2021, an equipment failure occurred on a pole or pole arm causing an interruption. This outage affected 1,207 customers for up to 524 minutes resulting in 316,534 CMI.

In total, the LOCK HAVEN 65-06 circuit had 59 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (41); equipment failure (12); animal contacts (5); nothing found (1).

Remedial Actions

- In 2021, two single-phase reclosers were installed.
- In 2021, additional fusing was installed.
- In 2021, several cutouts were replaced.
- In 2021, an additional sectionalizing device was installed.
- In 2022, a section of difficult-to-access conductor was relocated to underground.
- In 2022, additional animal guarding was installed.
- In 2022, an additional Smart Grid device was installed.
- In 2023, two single-phase reclosers will be installed.

29 Circuit 21203 -- EAST CARBONDALE 12-03

Performance Analysis

The EAST CARBONDALE 12-03 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On October 18, 2021, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 334 customers for up to 323 minutes resulting in 107,614 CMI.

In total, the EAST CARBONDALE 12-03 circuit had 37 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (17); equipment failure (12); animal contacts (6); nothing found (1); vehicles (1).

Remedial Actions

- In 2021, numerous porcelain cutouts were replaced.
- In 2022, additional animal guarding was installed.
- In 2022, numerous porcelain cutouts will be replaced.
- In 2022, additional reclosers will be installed.
- In 2023, numerous porcelain cutouts will be replaced.
- In 2023, a section of line will be reconducted.

30 Circuit 21206 -- EAST CARBONDALE 12-06

Performance Analysis

The EAST CARBONDALE 12-06 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On May 16, 2022, a vehicle contacted a pole causing a sectionalizing device to be interrupted. This outage affected 492 customers for up to 517 minutes resulting in 120,081 CMI.

On December 4, 2021, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 2,640 customers for up to 444 minutes resulting in 524,497 CMI.

In total, the EAST CARBONDALE 12-06 circuit had 27 outages between October 2021 and September 2022, with the causes breaking down as follows: animal contacts (8); tree related (8); equipment failure (6); other (3); vehicles (2).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2021, a section of difficult-to-access conductor was relocated.
- In 2022, hot spot trimming was performed.
- In 2022, additional animal guarding will be installed.
- In 2022, three single-phase reclosers will be installed.
- In 2022, a section of conductor will be replaced.
- In 2022, additional single-phase tie lines will be evaluated.
- In 2022, storm hardening will be evaluated for a section of this circuit.
- In 2023, three single-phase reclosers will be installed.
- In 2023, numerous porcelain cutouts will be replaced.

31 Circuit 54701 -- NEW BLOOMFIELD 47-01

Performance Analysis

The NEW BLOOMFIELD 47-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 159,381 CMI.

In total, the NEW BLOOMFIELD 47-01 circuit had 51 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (33); animal contacts (8); equipment failure (8); nothing found (1); vehicles (1).

Remedial Actions

- In 2021, hazard tree removal was performed.
- 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 2022, 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, two sections of single-phase will be relocated underground.

32 Circuit 22703 -- MINOOKA 27-03

Performance Analysis

The MINOOKA 27-03 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the MINOOKA 27-03 circuit had 19 outages between October 2021 and September 2022, with the causes breaking down as follows: animal contacts (7); equipment failure (6); nothing found (2); tree related (2); vehicles (2).

Remedial Actions

- In 2022, additional animal guarding will be 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.

33 Circuit 45402 -- WEST BLOOMSBURG 54-02

Performance Analysis

The WEST BLOOMSBURG 54-02 circuit experienced three outages of over 100,000 CMI between October 2021 and September 2022.

On September 14, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a load break fuse to operate. This outage affected 127 customers for up to 866 minutes resulting in 100,631 CMI.

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.

On August 1, 2021, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 274 customers for up to 631 minutes resulting in 161,148 CMI.

In total, the WEST BLOOMSBURG 54-02 circuit had 133 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (101); equipment failure (13); animal contacts (12); nothing found (4); vehicles (2); other (1).

Remedial Actions

- In 2021, fault indicators were installed on a section of this circuit.
- In 2021, three single-phase reclosers were installed.
- In 2022, six single-phase reclosers were installed.
- In 2022, full circuit trimming was performed.
- In 2022, additional fusing will be installed.
- In 2022, additional animal guarding will be installed.
- In 2022, additional sectionalizing will be evaluated.
- In 2022, a single-phase tie will be evaluated.
- In 2022, additional reconductoring and storm hardening will be evaluated.
- In 2023, a section of difficult-to-access conductor will be relocated to underground.
- In 2023, an additional single-phase recloser will be installed.

34 Circuit 59301 -- MC ALISTERVILLE 93-01

Performance Analysis

The MC ALISTERVILLE 93-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On June 1, 2022, during a period of lightning, an equipment failure occurred on an overhead conductor causing a motor operated switch to be interrupted. This outage affected 1,207 customers for up to 221 minutes resulting in 170,897 CMI.

In total, the MC ALISTERVILLE 93-01 circuit had 46 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (18); equipment failure (14); animal contacts (7); nothing found (5); vehicles (2).

Remedial Actions

- In 2022, a single-phase recloser was installed.
- In 2022, two multi-phase reclosers will be evaluated.
- In 2023, a new section of three-phase and an additional three-phase sectionalizing device will be installed.
- In 2024, a new three-phase recloser will be installed.

35 Circuit 17802 -- GILBERT 78-02

Performance Analysis

The GILBERT 78-02 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On August 27, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 176 customers for up to 677 minutes resulting in 106,344 CMI.

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 103 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (58); animal contacts (20); equipment failure (14); nothing found (4); vehicles (4); other (3).

Remedial Actions

- In 2021, hot spot trimming was performed.
- In 2021, four single-phase reclosers were installed.
- In 2021, a Smart Grid device was replaced.
- In 2021, a section of difficult-to-access conductor was relocated.
- In 2021, five transformers were replaced.
- In 2022, a single-phase recloser was installed.
- In 2022, several poles were replaced or relocated.
- In 2022, additional animal guarding will be installed.
- In 2022, two sections of difficult-to-access single-phase will be relocated.
- In 2022, full circuit trimming will be performed.
- In 2022, numerous porcelain cutouts will be replaced.

36 Circuit 46004 -- BERWICK 60-04

Performance Analysis

The BERWICK 60-04 circuit experienced two outages of over 100,000 CMI between October 2021 and September 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.

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

In total, the BERWICK 60-04 circuit had 45 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (21); animal contacts (9); equipment failure (8); nothing found (4); other (2); vehicles (1).

Remedial Actions

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

37 Circuit 59101 -- WALKER 91-01

Performance Analysis

The WALKER 91-01 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

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.

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

In total, the WALKER 91-01 circuit had 54 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (24); equipment failure (13); animal contacts (11); vehicles (3); contact or dig in (1); nothing found (1); other (1).

Remedial Actions

- In 2021, additional fusing was installed.
- 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 2022, two animal guards will be installed.
- In 2022, two fuses will be installed.
- In 2022, a new three-phase recloser will be installed.
- In 2022, a section of single-phase will be evaluated for reconductoring.

38 Circuit 28804 -- LAKEVILLE 88-04

Performance Analysis

The LAKEVILLE 88-04 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the LAKEVILLE 88-04 circuit had 49 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (26); animal contacts (11); equipment failure (11); nothing found (1).

Remedial Actions

- In 2022, additional animal guarding will be installed.
- In 2022, additional reclosers will be installed.
- In 2023, additional animal guarding will be installed.

39 Circuit 17902 -- BARTONSVILLE 79-02

Performance Analysis

The BARTONSVILLE 79-02 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the BARTONSVILLE 79-02 circuit had 41 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (18); animal contacts (11); equipment failure (7); vehicles (4); other (1).

Remedial Actions

- In 2022, additional animal guarding will be installed.
- In 2022, a single-phase tie will be constructed.
- In 2022, additional reclosers will be installed.
- In 2022, one section of three-phase tie will be reconducted.
- In 2023, full circuit trimming will be performed.

40 Circuit 21601 -- EYNON 16-01

Performance Analysis

The EYNON 16-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 60 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (22); equipment failure (16); animal contacts (12); nothing found (7); vehicles (2); other (1).

Remedial Actions

- In 2023, full circuit trimming will be performed.
- In 2022, additional animal guarding will be installed.
- In 2022, additional fusing will be installed.
- In 2022, several cutouts will be replaced.
- 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.

41 Circuit 64201 -- KINZER 42-01

Performance Analysis

The KINZER 42-01 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On August 15, 2021, a vehicle contact caused a recloser to trip to lockout. This outage affected 813 customers for up to 377 minutes resulting in 116,365 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 34 outages between October 2021 and September 2022, with the causes breaking down as follows: equipment failure (16); tree related (8); vehicles (7); nothing found (2); animal contacts (1).

Remedial Actions

- In 2021, an existing recloser was upgraded to a Smart Grid device.
- In 2021, a Proactive Circuit Analysis was conducted with several minor remediations performed.
- In 2022, an existing tie switch was replaced with a Smart Grid device.
- In 2022, additional animal guarding was installed.
- In 2022, four fuses will be installed.
- In 2022, a three-phase manual sectionalizing device will be evaluated.
- In 2022, a single-phase tie will be evaluated.
- In 2022, several poles will be evaluated for relocation.
- In 2024, full circuit trimming will be performed.

42 Circuit 29702 -- ANGELS 91-02

Performance Analysis

The ANGELS 91-02 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 51 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (32); animal contacts (11); equipment failure (6); nothing found (1); vehicles (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2023, additional animal guarding will be installed.
- In 2023, additional reclosers will be installed.
- In 2023, several poles will be replaced or relocated.

43 Circuit 21901 -- HUMBOLDT 19-01

Performance Analysis

The HUMBOLDT 19-01 circuit experienced three outages of over 100,000 CMI between October 2021 and September 2022.

On September 15, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 328 customers for up to 1,422 minutes resulting in 258,567 CMI.

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

On September 14, 2021, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 370 customers for up to 1,054 minutes resulting in 154,562 CMI.

In total, the HUMBOLDT 19-01 circuit had 103 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (73); equipment failure (14); animal contacts (9); other (3); vehicles (3); nothing found (1).

Remedial Actions

- In 2021, full circuit trimming was performed, as well as removal of over 1,000 hazard trees.
- In 2022, a single-phase underground tie was constructed.
- In 2022, additional single-phase ties will be evaluated for this circuit.
- In 2022, an existing three-phase recloser will be 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.

44 Circuit 67801 -- WEST LANCASTER 78-01

Performance Analysis

The WEST LANCASTER 78-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the WEST LANCASTER 78-01 circuit had 19 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (7); equipment failure (5); 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, full circuit trimming will be performed.
- In 2022, a new three-phase sectionalizing device will be evaluated.
- In 2022, additional fusing will be evaluated.

45 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On July 11, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 197 customers for up to 555 minutes resulting in 103,819 CMI.

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 108 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (57); animal contacts (24); equipment failure (18); nothing found (4); vehicles (3); other (2).

Remedial Actions

- In 2021, a section of single-phase was relocated.
- In 2021, 215 hazard trees were removed.
- In 2021, expanded trimming right-of-way was obtained for sections of this circuit.
- In 2021, a section of single-phase was relocated to underground.
- In 2021, one section of single-phase was reconductored.
- 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, an additional section of single-phase was reconductored.
- In 2022, a section of single-phase was relocated.
- In 2022, one section of single-phase was re-sourced to reduce exposure, with another to be done in 2022.
- In 2022, additional animal guarding will be installed.
- In 2022, 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.

46 Circuit 26601 -- BROOKSIDE 66-01

Performance Analysis

The BROOKSIDE 66-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the BROOKSIDE 66-01 circuit had 53 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (38); equipment failure (12); animal contacts (3).

Remedial Actions

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

47 Circuit 24703 -- FREELAND 47-03

Performance Analysis

The FREELAND 47-03 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

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.

On August 23, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,039 customers for up to 112 minutes resulting in 116,368 CMI.

In total, the FREELAND 47-03 circuit had 24 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (10); animal contacts (4); equipment failure (4); vehicles (3); contact or dig in (1); nothing found (1); other (1).

Remedial Actions

- 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, two single-phase reclosers will be installed.
- In 2022, an additional Smart Grid device will be evaluated.
- In 2022, additional single-phase ties will be evaluated.
- In 2025, a three-phase tie to the ST JOHNS 30-02 will be constructed.

48 Circuit 26001 -- WEST DAMASCUS 60-01

Performance Analysis

The WEST DAMASCUS 60-01 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

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

On July 7, 2021, during a period of lightning, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 435 customers for up to 1,329 minutes resulting in 458,643 CMI.

In total, the WEST DAMASCUS 60-01 circuit had 90 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (49); equipment failure (20); animal contacts (12); nothing found (6); vehicles (2); other (1).

Remedial Actions

- In 2021, a section of single-phase was reconnected.
- In 2021, numerous porcelain cutouts were replaced.
- In 2021, additional fusing was installed.
- In 2021, a Smart Grid device was replaced.
- In 2021, a section of difficult-to-access conductor was relocated.
- In 2022, two additional single-phase reclosers with downstream fusing were installed with one more to be completed in 2022.
- In 2022, several poles and cross-arms were replaced.
- In 2022, additional animal guarding will be installed.
- In 2022, a new three-phase tie line will be evaluated.
- In 2022, hazard tree removal will be evaluated.
- In 2022, additional fusing will be installed.
- In 2023, full circuit trimming will be performed.

49 Circuit 27101 -- GREENFIELD 71-01

Performance Analysis

The GREENFIELD 71-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the GREENFIELD 71-01 circuit had 73 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (33); equipment failure (18); nothing found (10); animal contacts (9); other (2); vehicles (1).

Remedial Actions

- In 2022, additional animal guarding will be installed.
- In 2022, six recloser were installed with one more to be completed in 2022.
- In 2022 and 2023, numerous porcelain cutouts will be replaced.
- In 2023, a section of difficult-to-access conductor will be relocated.
- In 2023, hazard tree removal will be evaluated.

50 Circuit 25501 -- MADISONVILLE 55-01

Performance Analysis

The MADISONVILLE 55-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the MADISONVILLE 55-01 circuit had 67 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (32); equipment failure (21); animal contacts (12); nothing found (1); vehicles (1).

Remedial Actions

- In 2022, four poles were replaced.
- In 2022, two recloser were installed.
- In 2022, additional animal guarding will be installed.
- In 2024, a section of difficult-to-access conductor will be replaced.

51 Circuit 15604 -- NO STROUDSBURG 56-04

Performance Analysis

The NO STROUDSBURG 56-04 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the NO STROUDSBURG 56-04 circuit had 85 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (49); animal contacts (22); equipment failure (11); nothing found (1); other (1); vehicles (1).

Remedial Actions

- In 2022, full circuit trimming will be performed.
- In 2022, additional animal guarding will be installed.
- In 2022, additional reclosers will be installed.
- In 2022, a new single-phase tie will be constructed.
- In 2022, a section of single-phase conductor will be installed.

52 Circuit 64801 -- MOUNT NEBO 48-01

Performance Analysis

The MOUNT NEBO 48-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the MOUNT NEBO 48-01 circuit had 75 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (32); equipment failure (19); animal contacts (16); nothing found (3); vehicles (3); other (2).

Remedial Actions

- In 2021, four fuses were installed.
- In 2021, a single-phase recloser was installed.
- In 2021, additional animal guarding was installed.
- In 2022, five single-phase reclosers will be installed.
- In 2022, a section of three-phase conductor will be relocated.
- In 2022, multiple sections of single-phase will be evaluated for reconfiguration.
- In 2022, multiple sections of single-phase will be evaluated for reconductoring.

53 Circuit 22406 -- MORGAN 24-06

Performance Analysis

The MORGAN 24-06 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the MORGAN 24-06 circuit had 62 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (38); equipment failure (15); nothing found (5); animal contacts (4).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, additional animal guarding will be installed.
- In 2022, numerous porcelain cutouts will be replaced.
- In 2022, 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.

54 Circuit 55401 -- SOUTH HERSHEY-H 54-01

Performance Analysis

The SOUTH HERSHEY-H 54-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On February 3, 2022, during a period of ice/sleet/snow, an equipment failure occurred on an underground conductor causing a circuit breaker to trip to lockout. This outage affected 450 customers for up to 641 minutes resulting in 157,476 CMI.

In total, the SOUTH HERSHEY-H 54-01 circuit had 8 outages between October 2021 and September 2022, with the causes breaking down as follows: equipment failure (5); animal contacts (2); nothing found (1).

Remedial Actions

- In 2021, two additional animal guards were installed.
- In 2022, proactive testing and replacement of the three-phase underground backbone will be evaluated.
- In 2023, full circuit trimming will be performed.
- In 2023, one additional fuse will be installed.

55 Circuit 56802 -- BENVENUE 68-02

Performance Analysis

The BENVENUE 68-02 circuit experienced one outage of over 100,000 CMI between October 2021 and September 2022.

On June 16, 2022, during a period of lightning, an unidentified issue occurred with 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 94 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (60); equipment failure (20); animal contacts (7); nothing found (3); other (3); vehicles (1).

Remedial Actions

- In 2021, a single-phase recloser was installed.
- In 2022, additional fusing was installed with more to be performed this year.
- In 2022, a section of single-phase was relocated and reconfigured.
- In 2022, two single-phase reclosers were installed.
- In 2022, a single-phase tie line will be evaluated.
- In 2022, relocating a section of three-phase conductor will be evaluated.
- In 2023, full circuit trimming will be performed.
- In 2023, a section of single-phase will be relocated to underground.

56 Circuit 41701 -- LOGANTON 17-01

Performance Analysis

The LOGANTON 17-01 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 61 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (41); equipment failure (10); animal contacts (7); nothing found (2); contact or dig in (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, a new transformer was installed at the substation.
- In 2022, additional animal guarding will be installed.
- In 2022, additional fusing will be installed.
- In 2024, an additional Smart Grid device will be installed.

57 Circuit 26704 -- HEMLOCK FARMS 67-04

Performance Analysis

The HEMLOCK FARMS 67-04 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the HEMLOCK FARMS 67-04 circuit had 41 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (19); animal contacts (10); equipment failure (7); nothing found (2); vehicles (2); other (1).

Remedial Actions

- In 2022, several poles were replaced.
- In 2022, additional animal guarding will be installed.
- In 2022, a new recloser will be installed.
- In 2022, a new single-phase tie will be constructed.
- In 2023, full circuit trimming will be performed.

58 Circuit 54202 -- PENNSBORO 42-02

Performance Analysis

The PENNSBORO 42-02 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

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.

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

In total, the PENNSBORO 42-02 circuit had 31 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (17); equipment failure (7); animal contacts (4); nothing found (1); other (1); vehicles (1).

Remedial Actions

- In 2021, additional animal guarding was installed.
- In 2022, full circuit trimming will be performed.
- In 2022, additional fusing will be installed.
- In 2022, a three-phase sectionalizing device will be evaluated.
- In 2022, settings on a three-phase device were optimized for coordination.
- In 2023, a single-phase fuse will be installed.

59 Circuit 16504 -- STROUDSBURG 65-04

Performance Analysis

The STROUDSBURG 65-04 circuit experienced one outage of over 100,000 CMI between October 2021 and September 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 33 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (13); equipment failure (9); animal contacts (8); nothing found (2); other (1).

Remedial Actions

- In 2022, several poles were replaced.
- In 2022, additional animal guarding will be installed.
- In 2023, additional tree trimming will be performed.

60 Circuit 29202 -- APPENZELL 92-02

Performance Analysis

The APPENZELL 92-02 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the APPENZELL 92-02 circuit had 44 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (31); animal contacts (8); other (2); equipment failure (1); nothing found (1); vehicles (1).

Remedial Actions

- In 2022, additional animal guarding will be installed.
- In 2022, the protection settings on this circuit will be evaluated and optimized.
- In 2022, an additional recloser will be installed.

61 Circuit 42701 -- AUGUSTAVILLE 27-01

Performance Analysis

The AUGUSTAVILLE 27-01 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the AUGUSTAVILLE 27-01 circuit had 92 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (56); animal contacts (17); equipment failure (14); nothing found (3); other (1); vehicles (1).

Remedial Actions

- In 2022, additional animal guarding will be installed at seven locations.
- In 2022, five locations will receive fusing.
- In 2022, an additional single-phase recloser will be installed.
- In 2022, a section of difficult-to-access conductor will be relocated.

62 Circuit 46802 -- HEPBURN 68-02

Performance Analysis

The HEPBURN 68-02 circuit experienced no outages of over 100,000 CMI between October 2021 and September 2022.

In total, the HEPBURN 68-02 circuit had 99 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (58); equipment failure (20); animal contacts (13); nothing found (4); vehicles (3); other (1).

Remedial Actions

- In 2022, additional animal guarding will be installed.
- In 2023, fusing will be installed at two locations.
- In 2023, multiple porcelain cutouts will be replaced.
- In 2024, a section of single-phase conductor will be relocated.
- In 2024, full circuit trimming will be performed.

63 Circuit 41901 -- REED 19-01

Performance Analysis

The REED 19-01 circuit experienced two outages of over 100,000 CMI between October 2021 and September 2022.

On December 2, 2021, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 408 customers for up to 379 minutes resulting in 154,615 CMI.

On March 31, 2022, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 309 customers for up to 345 minutes resulting in 106,357 CMI.

In total, the REED 19-01 circuit had 35 outages between October 2021 and September 2022, with the causes breaking down as follows: tree related (17); animal contacts (8); equipment failure (6); nothing found (2); vehicles (2).

Remedial Actions

- In 2021, a three-phase manual sectionalizing device was replaced with a Smart Grid device.
- In 2021, a drone patrol was conducted with several remediations identified and detailed below.
- In 2022, approximately 70 poles were replaced.
- In 2022, a section of difficult-to-access conductor was relocated.
- In 2022, an analysis of momentary interruptions was performed with several remediations performed.
- In 2022, full circuit trimming will be performed.
- In 2023, six additional locations will receive fusing.

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	4,883	20.7%	58,054	4.9%	4,717,669	2.6%
Contact / Dig-In	170	0.7%	12,593	1.1%	1,018,361	0.6%
Directed by Non-PPL Authority	62	0.3%	5,596	0.5%	440,903	0.2%
Equipment Failures	5,582	23.7%	301,797	25.4%	30,838,260	17.0%
Improper Design	-	0.0%	-	0.0%	-	0.0%
Improper Installation	1	0.0%	50	0.0%	5,291	0.0%
Improper Operation	3	0.0%	980	0.1%	49,346	0.0%
Nothing Found	940	4.0%	62,689	5.3%	5,427,428	3.0%
Other Controllable	64	0.3%	9,878	0.8%	941,267	0.5%
Other Non Control	166	0.7%	14,068	1.2%	1,129,918	0.6%
Other Public	29	0.1%	5,509	0.5%	622,333	0.3%
Tree Related	10,836	46.0%	578,957	48.8%	120,883,332	66.8%
Unknown	-	0.0%	-	0.0%	-	0.0%
Vehicles	801	3.4%	136,128	11.5%	14,954,583	8.3%
Total	23,537	100.0%	1,186,299	100.0%	181,028,691	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 47% of cases, 55% of customer interruptions, and 72% 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 78% of the cases of trouble, 80% of the customer interruptions and 89% of the customer minutes attributed to tree related outages were weather-related.

Animals: Animals accounted for approximately 21% of PPL Electric's cases of trouble. Although this represents a significant number of cases, the effect on SAIFI and CAIDI is small because approximately 75% of the number of cases of trouble were associated with individual distribution transformers. However, when animal contacts affect substation equipment, the effect may be widespread and potentially can interrupt thousands of customers on multiple circuits. In addition to guarding new distribution transformers and substations, PPL Electric initiated distribution and substation animal guarding programs in 2009 to focus systematically on protecting existing facilities most at risk of incurring animal-caused interruptions. A complete effectiveness review of this strategy is being evaluated.

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

Equipment Failure: Equipment failure is one of the largest single contributors to the number of cases of trouble, customer interruptions and customer minutes. However, approximately 36% of the cases of trouble, 40% of the customer interruptions and 50% 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	3rd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of poles)	61	22	22	41	41
Transmission arm replacements (# of arms)	42	22	22	28	28
Transmission air break switch inspections (# of switches)	1	-	-	1	1
Transmission surge arrester installations (# of sets)	541	285	285	541	541
Transmission structure inspections (# of activities)	15,988	3,147	3,147	7,669	7,669
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	901	291	171	563	518
Transmission reclearing (# of miles) 69 kV	1,651	434	434	848	788
Transmission reclearing (# of miles) 138 kV	57	57	57	57	57
Transmission danger tree removals-Bulk Power (# of trees)	N/A				
Substation					
Substation batteries (# of activities)	394	60	6	394	337
Circuit breakers (# of activities)	487	408	1	423	14
Substation inspections (# of activities)	1,878	604	100	1,700	1,193
Transformer maintenance (# of activities)	555	75	0	540	137

Inspection & Maintenance Goals/Objectives	Annual Budget	3rd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	1,238	310	265	928	1,459
C-truss distribution poles (# of poles)	3,888	350	537	1,050	1,052
Capacitor (MVAR added)	N/A	0	0	5.8	5.8
OCR Replacements (# of)	0	0	0	0	2
Distribution pole inspections (# of poles)	69,900	17,500	12,093	49,370	46,571
Distribution line inspections (miles)	2,200	1,804	1,804	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	120	120	232	232
Distribution tree trimming (# of miles)	5,261	1,034	895	3,306	3,155
Distribution herbicide (# of acres)	N/A		152		329
Distribution >18" removals within R/W (# of trees)	N/A		1,315		3,395
Distribution hazard tree removals outside R/W (# of trees)	N/A		5,809		17,075
LTN manhole inspections (# of)	116	29	0	87	163
LTN vault inspections (# of)	378	95	0	284	105
LTN network protector overhauls (# of)	12	3	0	9	17
LTN reverse power trip testing (# of)	14	4	0	11	4

- 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	3rd Quarter			Year-to-date	
	2022 Budget (000s)	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
Provide Electric Service	5,799	1,659	1,200	4,326	5,737
Vegetation Management	33,292	8,213	10,807	26,684	30,759
Customer Response	60,906	17,313	16,114	46,886	56,269
Reliability Maintenance	21,217	5,668	4,845	17,433	20,278
System Upgrade	3,870	950	76	2,936	473
Customer Service/Accounts	109,576	29,432	37,099	78,871	101,307
Others	63,970	16,143	19,533	48,026	50,848
Total O&M Expenses	298,629	79,378	89,673	225,162	265,670

- 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	3rd Quarter			Year-to-date	
	2022 Budget (000s)	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
New Service/Revenue	92,169	25,420	26,227	70,182	88,358
System Upgrade	205,389	52,369	49,883	174,649	153,431
Reliability & Maintenance	500,801	116,928	97,828	393,450	348,776
Customer Response	34,262	9,771	7,290	27,519	33,894
Other	27,172	8,507	3,849	22,344	15,145
Total	859,793	212,995	185,077	688,143	639,603

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 3rd quarter of 2022, two corrective work orders were created with the following breakdown by priority.

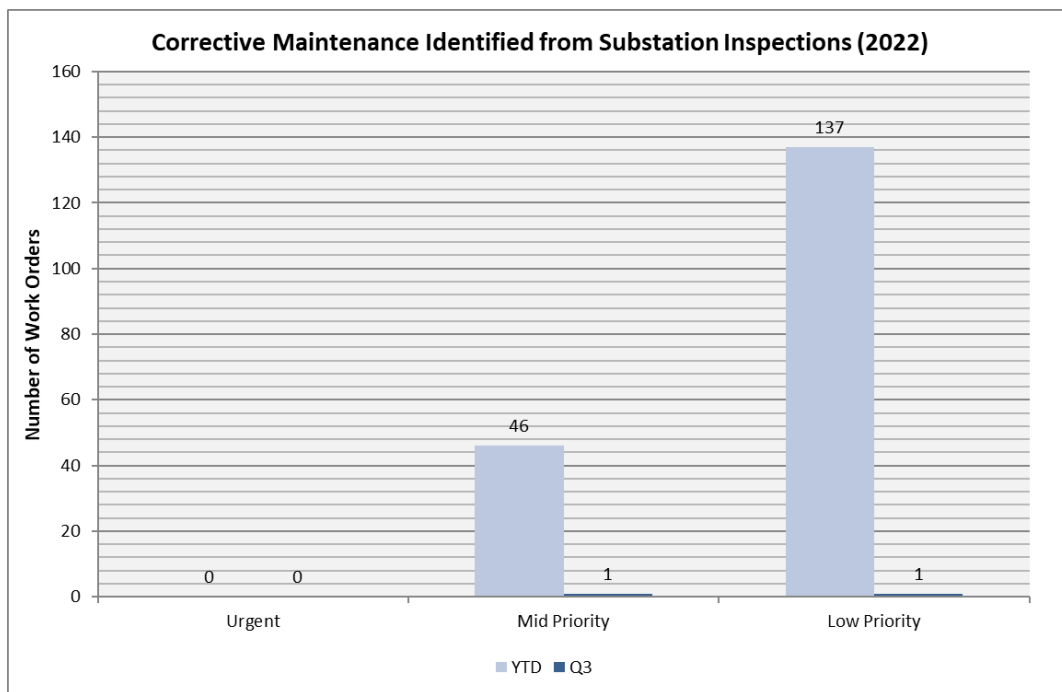


Figure 1: Corrective Maintenance Work Orders by Priority Level for 3rd Quarter and Year-to-Date 2022

(b) The Amount Spent on Substation Inspections

During the 3rd quarter of 2022, PPL Electric Utilities spent approximately \$330,000 on substation inspections.

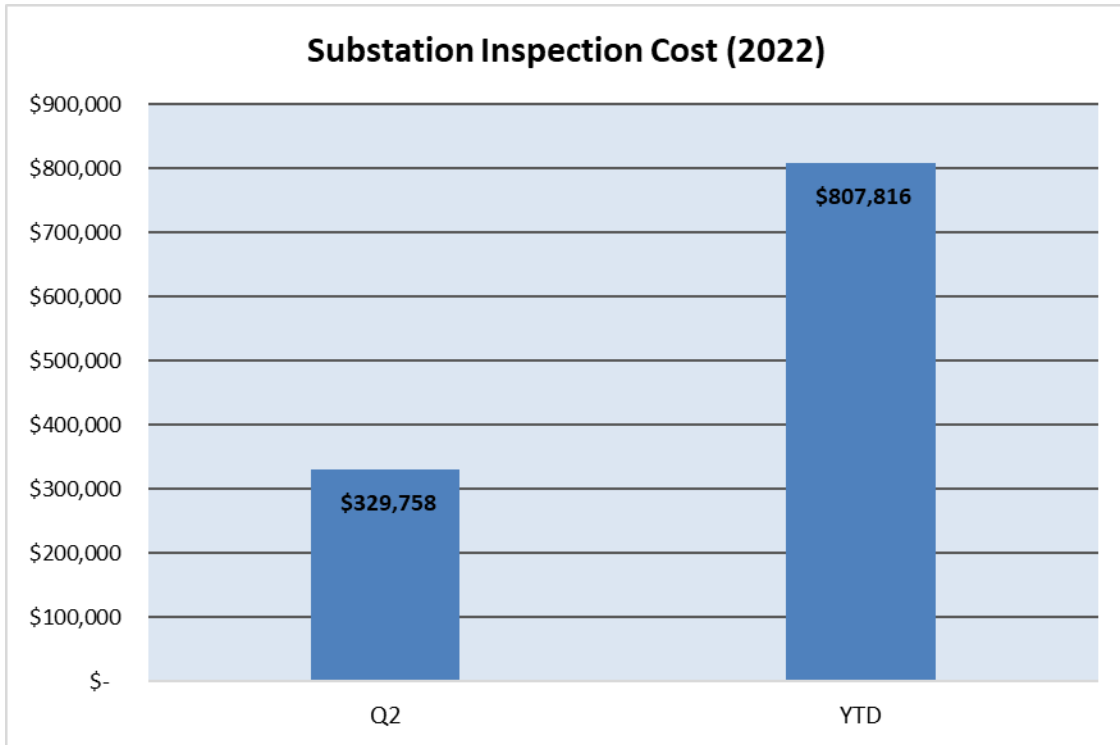


Figure 2: Substation Inspection Costs for 3rd Quarter and Year-to-Date 2022

(c) The Amount Spent on Vegetation Management

Please refer to Section 7 for vegetation management expenses for the 3rd 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 3rd quarter and year-to-date. During the 3rd quarter of 2022, PPL Electric Utilities avoided a projected 38,000 CMI.

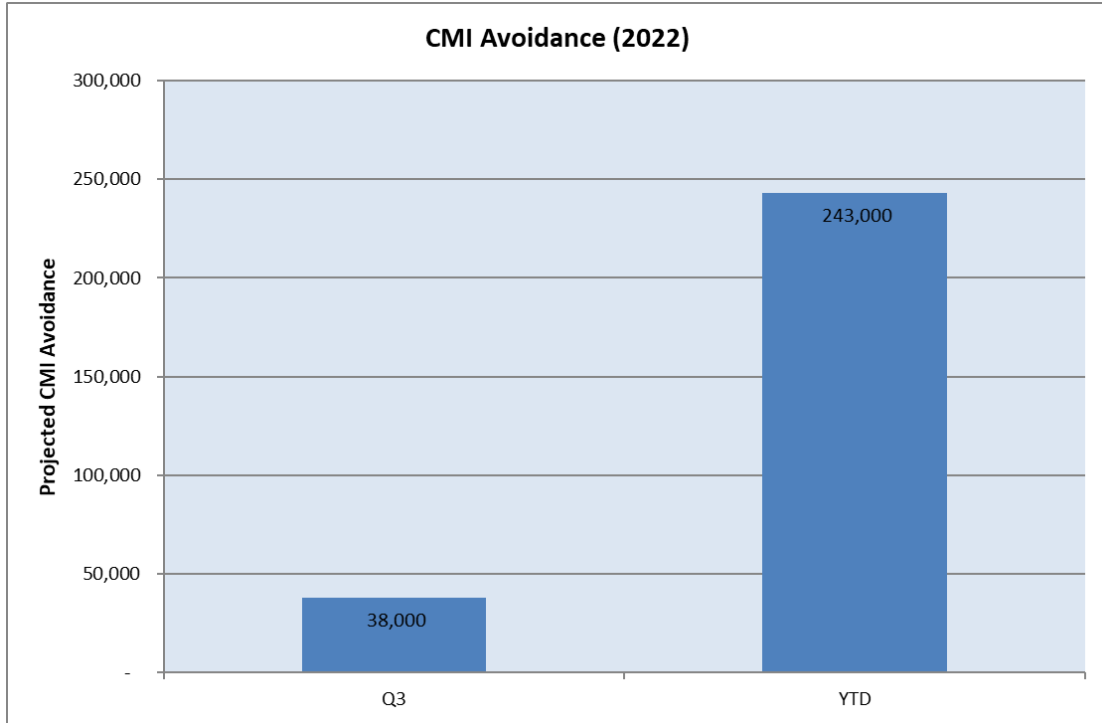


Figure 3: Projected CMI Avoidance Due to Substation Inspections for 3rd Quarter and Year-to-Date 2022

(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 3rd quarter of 2022, the Company interrupted approximately 16,000 customers for a total of 273,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.

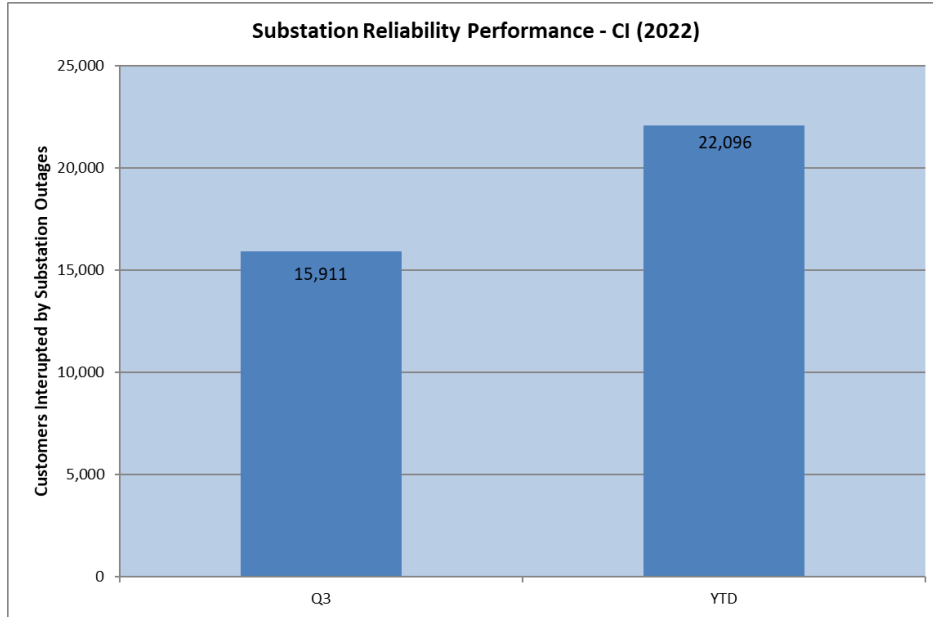


Figure 4: Substation Customers Interrupted for 3rd Quarter and Year-to-Date 2022

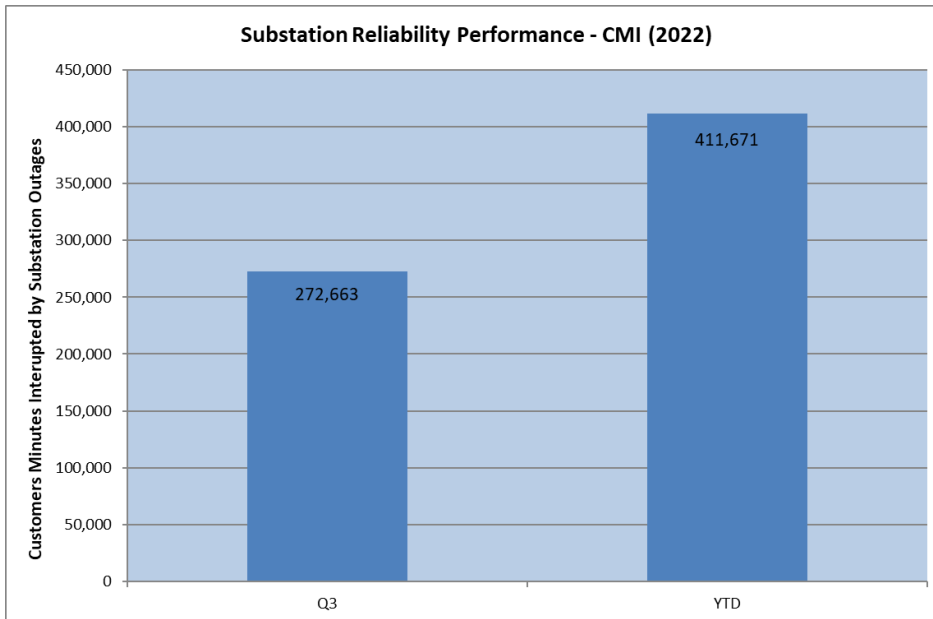


Figure 5: Substation Customer Minutes of Interruption for 3rd Quarter and Year-to-Date 2022

(f) Substation SAIFI Contribution

Overall, substation outages contributed approximately 4.8% of the total SAIFI experienced by PPL Electric customers in the 3rd 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.

	3rd Quarter	Year-to-Date
Substations with Remote Monitoring	354	354
Total Number of Substations	356	356

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

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

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

Transmission and Distribution	
Lineman Leader	61
Journeyman Lineman	149
Journeyman Lineman-Trainee	66
Helper	57
Groundhand	1
Troubleman	50
T&D Total	384
Electrical	
Elect Leaders-UG	2
Elect Leaders-Net	8
Elect Leaders-Sub	18
Journeyman Elect-UG	7
Journeyman Elect-Net	27
Journeyman Elect-Sub	42
Electrical Total	104
Overall Total	488

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.

PPL Electric Utilities Corporation

Job Descriptions

Transmission and Distribution

Groundhand	<ul style="list-style-type: none">• Performs manual labor and assists employees in higher job classifications.
Helper	<ul style="list-style-type: none">• Performs semi-skilled labor at any work location on de-energized overhead and underground transmission, and distribution facilities to prepare the employee for entrance into the Journeyman Lineman Apprenticeship Program.
Journeyman Lineman	<ul style="list-style-type: none">• Works 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Responsible for completing assigned work by directing one or multiple groups of employees involved in the maintenance, operation, and construction activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.• Engage in and perform work along with providing the necessary leadership, all-around knowledge, 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	<ul style="list-style-type: none">• Investigates and resolves trouble calls, voltage abnormalities on transmission and distribution systems associated with, but not limited to, PPL Electric facilities.

Appendix B

Electrical

Electrician Leader - Substation - Network - Underground	<ul style="list-style-type: none">• Responsible for completing assigned work by directing one or multiple groups of employees involved in the construction and maintenance activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.• Engage in and perform work along with providing the necessary leadership, all-around knowledge, 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	<ul style="list-style-type: none">• Performs manual labor at any work location including those areas containing non-exposed energized electrical equipment, and to prepare the employee for entrance into the Apprenticeship Program.
Laborer - Substation - Network - Underground	<ul style="list-style-type: none">• Performs manual labor and assists employees in higher job classifications.
Journeyman Electrician - Substation - Network - Underground	<ul style="list-style-type: none">• Normally under limited supervision performs and is responsible for work associated with, but not limited to, PPL Electric facilities involving the highest degree of skill in construction and maintenance work associated with substations, LTN or underground distribution and transmission.• Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the field services electrical discipline.

Appendix B

<p>Journeyman Electrician - Trainee</p> <ul style="list-style-type: none">- Substation- Network- Underground	<ul style="list-style-type: none">• Normally under limited supervision performs and is responsible for work associated with, but not limited to, PPL Electric facilities involving the highest degree of skill in construction and maintenance work associated with substations, LTN or underground distribution and transmission.• Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the field services electrical discipline.
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