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E-FILE

May 18, 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 March 31, 2022 - CORRECTED
Docket No. M-2016-2522508

Dear Ms. Chiavetta:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric" or "the Company") is an original of PPL Electric's **CORRECTED,** non-confidential version of the Quarterly Reliability Report for the Period Ended March 31, 2022 ("Quarterly Reliability Report"). The Company respectfully requests that its original Quarterly Reliability Report for the first quarter of 2022, filed on April 29, 2022 pursuant to the Commission's regulations at 52 Pa. Code § 57.195(d), be removed from the docket to avoid any confusion.

The following corrections have been made in the instant filing:

- **Reliability Indices Table on Page 3** –

  1. The 2021 figure for Number of Sustained Customer Service Interruptions (Trouble Cases) has been corrected from 25,850 to 25,851; and
  2. The 2021 figure for Number of Customers Affected has been corrected from 1,408,764 to 1,409,523.

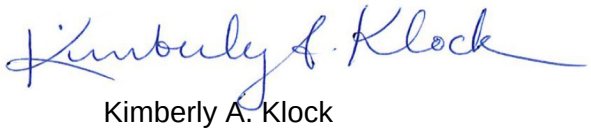
- **Outage Causes Table on Page 45** –

  1. In the Improper Design row, Trouble Cases has been corrected from 0 to 1, Customer Interruptions has been corrected from 0 to 759, and Percent of Customer Interruptions has been corrected from 0.0% to 0.1%;
  2. In the Total row, Trouble Cases has been corrected from 25,850 to 25,851 and Customer Interruptions has been corrected from 1,408,764 to 1,409,523.

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

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

Respectfully submitted,



Kimberly A. Klock

Enclosures

cc via email: Patrick Cicero, Esquire
Steven Gray, Esquire
Mr. Daniel Searfoorce
Mr. Harry Bidelspach

PPL Electric Utilities Corporation

Quarterly Reliability Report

to the

Pennsylvania Public Utility Commission

April 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 first 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 March 31, 2022.

SAIFI	BM 0.98	0.97
	STD 1.18	0.97
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	BM 145	190
	STD 174	190
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	BM 142	185
	STD 205	185
MAIFI		2.8
Average Number of Customers Served [1]		1,447,799
Number of Sustained Customer Interruptions (Trouble Cases)		25,851
Number of Customers Affected [2]		1,409,523
Customer Minutes of Interruptions (CMI)		268,351,968
Number of Customer Momentary Interruptions		4,086,420

[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 first quarter, there were no (0) PUC major events, three (3) PUC reportable events, and six (6) 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 Q1 2022, we have 45 total storms in the rolling four quarters, the most ever.

Year	Non Reportable Storms	PUC Major Events	PUC Storms	Total Storms	PUC Storm Cases	PUC Storm CI	PUC Storm CMI
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		4	18	2,882	302,418	97,539,670
2005	9	1	4	14	2,088	203,184	41,309,452
2006	19		9	28	5,067	547,811	148,541,051
2007	22	1	5	28	3,973	427,012	98,060,819
2008	20		7	27	3,952	443,305	137,727,147
2009	16		4	20	2,692	257,598	52,777,061
2010	19		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		3	16	1,112	127,021	26,326,830
2014	11		5	16	3,250	294,917	132,991,117
2015	19		1	20	1,015	167,931	28,418,978
2016	20		4	24	2,696	266,922	54,674,446
2017	16		10	26	3,000	258,504	71,286,608
2018	17	1	5	23	3,952	305,482	110,654,537
2019	16		10	26	5,339	409,578	131,734,085
2020	19		8	27	6,446	460,988	98,853,825
2021	27		15	42	10,230	616,913	177,625,959

PPL Electric's first quarter reliability performance for SAIFI and SAIDI was within the PUC standard, with SAIFI also within the PUC benchmark. PUC CAIDI was outside of both standard and benchmark values due to the 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. While PUC CAIDI is elevated, IEEE CAIDI, which is normalized for weather performance, is only mildly above 2nd quartile among large utility performance nationally.

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 survey[3]. 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 3/31/2022	124	0.74	92
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 reliability index values for the worst performing 5% of the circuits in the system for the 12 months ended at the current quarter. An explanation of how PPL Electric defines its worst performing circuits is included in Appendix A.

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
1	47704	1172	160	7.34	3.3	1,391	99	1,631,440
2	55001	792	114	6.92	3.2	1,311	120	1,039,291
3	29402	632	125	5.04	2.0	1,636	61	1,034,461
4	20403	628	193	3.26	5.1	1,948	87	1,223,425
5	46001	551	147	3.76	0.0	2,360	74	1,300,504
6	47001	712	377	1.89	13.1	2,512	101	575,803
7	11506	558	131	4.25	4.8	1,305	74	728,982
8	45602	605	197	3.08	3.4	1,634	54	989,699
9	56504	535	204	2.63	7.8	1,991	112	1,066,091
10	26604	434	100	4.34	3.8	2,424	104	1,053,420
11	45402	551	221	2.49	5.4	1,638	127	903,919
12	20601	593	222	2.68	24.8	1,477	71	875,889
13	21901	398	159	2.50	3.4	2,608	102	1,039,677
14	17803	410	149	2.75	7.6	1,645	65	675,848
15	47002	400	176	2.27	4.0	2,010	81	805,397
16	26001	906	412	2.20	1.9	1,431	91	1,297,719
17	45902	431	141	3.05	7.1	1,348	72	582,027
18	15001	450	159	2.83	4.6	1,388	40	625,192
19	28602	373	149	2.50	1.0	1,942	62	724,664
20	18001	1123	256	4.38	1.4	690	33	775,281
21	56501	358	180	1.99	2.2	2,361	60	846,837
22	64201	317	96	3.29	3.5	1,899	30	603,704
23	17802	348	151	2.31	6.3	1,963	95	683,920
24	53601	445	147	3.02	0.8	1,115	44	496,246

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
25	43401	519	171	3.03	6.5	995	69	516,561
26	56802	372	155	2.41	3.6	1,526	80	568,553
27	45303	366	134	2.73	1.1	1,355	37	496,763
28	10601	303	120	2.52	0.7	1,729	94	525,433
29	53901	353	129	2.73	7.6	1,327	53	469,718
30	45302	508	220	2.31	2.9	1,229	57	624,339
31	46506	301	117	2.57	2.2	1,672	55	503,783
32	40101	319	185	1.73	1.9	2,151	58	687,959
33	43201	648	251	2.58	1.1	978	77	633,975
34	52402	295	126	2.34	2.3	1,694	89	500,978
35	61801	285	113	2.53	2.1	1,622	47	462,564
36	46302	617	283	2.18	1.7	1,092	91	674,220
37	51502	317	182	1.74	2.2	1,936	15	615,600
38	16005	717	364	1.97	0.0	1,129	41	809,880
39	10904	329	196	1.68	4.3	1,762	113	581,075
40	46504	220	74	2.96	3.0	1,925	56	423,722
41	25801	302	180	1.68	2.7	1,837	68	555,975
42	54701	283	95	2.97	0.7	1,127	44	319,643
43	18502	211	57	3.70	7.3	1,873	144	397,006
44	55002	395	124	3.19	2.9	759	37	300,517
45	29501	313	126	2.48	0.2	1,089	53	341,346
46	45002	352	204	1.72	1.5	1,450	63	510,658
47	46004	488	476	1.03	1.7	2,071	38	1,011,190
48	13401	218	78	2.79	1.0	1,386	14	302,625
49	21206	227	157	1.45	1.2	2,472	19	563,086
50	26401	212	121	1.76	7.4	2,225	110	472,704
51	40901	228	133	1.71	1.6	1,946	53	445,050
52	16402	270	133	2.04	6.1	1,281	64	346,288
53	16101	223	104	2.15	3.2	1,505	68	336,180
54	23301	398	266	1.49	1.0	1,391	44	554,536
55	42401	451	162	2.79	1.8	718	52	324,124
56	29503	419	238	1.76	1.2	1,143	32	479,617
57	43701	527	274	1.93	1.1	993	22	523,912
58	11003	380	133	2.86	2.4	721	21	274,079
59	44802	462	390	1.18	0.4	1,615	44	746,330
60	12701	275	142	1.94	1.7	1,187	62	327,304
61	27504	229	80	2.88	0.6	882	24	202,258
62	48301	253	95	2.68	1.1	889	35	225,106
63	57502	239	151	1.59	2.2	1,535	24	367,764

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

01 Circuit 47704 -- BLOOMSBURG 77-04

Performance Analysis

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

On 19-Feb-22, 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 2-Dec-21, 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.

On 26-Nov-21, 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 28-Oct-21, during a period of strong wind, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 268 customers for up to 1,690 minutes resulting in 137,560 CMI.

On 12-Jul-21, 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 15-Sep-21, 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 1-Apr-21, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 1,391 customers for up to 191 minutes resulting in 110,888 CMI.

In total, the BLOOMSBURG 77-04 circuit had 91 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (60); equipment failure (15); animal contacts (11); nothing found (2); other (2); vehicles (1).

Remedial Actions

- In 2021, two single-phase reclosers were installed.
- In 2022, a section of line will be reconductored.

- In 2022, a section of single-phase conductor will be relocated.
- In 2022, additional fusing will be installed.
- In 2022, additional sectionalizing capability will be added to this circuit.
- In 2022, five single-phase reclosers will be installed.
- In 2022, a section of conductor in a heavily wooded area will be undergrounded.
- In 2022, additional animal guarding will be installed.
- In 2022, additional hazard tree removal will be performed.

02 Circuit 55001 -- NEWPORT 50-01

Performance Analysis

The NEWPORT 50-01 circuit experienced three outages of over 100,000 CMI between April 2021 and March 2022.

On 2-Apr-22, a vehicle contacted a pole causing an interruption. This outage affected 1,060 customers for up to 796 minutes resulting in 218,780 CMI.

On 26-Nov-21, 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.

On 26-Oct-21, an equipment failure occurred on an overhead splice causing an interruption. This outage affected 995 customers for up to 415 minutes resulting in 195,976 CMI.

In total, the NEWPORT 50-01 circuit had 120 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (67); equipment failure (33); animal contacts (9); nothing found (5); vehicles (4); other (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 will be relocated.
- In 2022, three fuses will be installed.
- In 2022, a section of single-phase will be reconductored.
- 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.

03 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 April 2021 and March 2022.

On 12-Nov-21, 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 26-Oct-21, 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.

On 2-Jul-21, 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 3-Jul-21, 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.

In total, the BELTZVILLE 69/12 KV 94-02 circuit had 44 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (24); equipment failure (10); animal contacts (5); vehicles (3); nothing found (2).

Remedial Actions

- In 2021, two dissimilar metal connections were remediated on three-phase reclosers.
- In 2022, a three-phase tie to the WEISSPORT 27503 line will be evaluated.
- In 2022, additional fusing will be added at eight locations.
- In 2022, two reclosers will be installed to split a tap into separate branches.
- In 2022, a Proactive Circuit Analysis was completed.
- In 2022, hot spot trimming and tree removal was completed.
- In 2022, a recloser that was programmed incorrectly was removed from service and corrected.
- In 2022, a new tie line to Carbon Substation will be evaluated.
- In 2022, targeted hazard tree removal will be performed.
- In 2023, full circuit trimming will be performed.
- In 2024, a section of difficult-to-access three-phase conductor will be relocated.

04 Circuit 20403 -- ASHFIELD 04-03

Performance Analysis

The ASHFIELD 04-03 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 14-Sep-21, an unidentified issue occurred with an overhead switch causing a recloser to trip to lockout. This outage affected 2,651 customers for up to 331 minutes resulting in 770,391 CMI.

On 12-Jul-21, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 1,892 customers for up to 187 minutes resulting in 146,345 CMI.

In total, the ASHFIELD 04-03 circuit had 75 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (44); equipment failure (16); nothing found (6); animal contacts (5); vehicles (3); other (1).

Remedial Actions

- In 2021, three additional single-phase reclosers were installed on this circuit.
- In 2021, an existing recloser was upgraded to a Smart Grid device.
- In 2022, two single-phase ties will be installed on this circuit.
- In 2022, a section of difficult-to-access conductor will be relocated.
- In 2022, hazard tree removal will be performed.
- In 2022, four additional single-phase reclosers will be installed.
- In 2023, a section of single-phase will be extended.

05 Circuit 46001 -- BERWICK 60-01

Performance Analysis

The BERWICK 60-01 circuit experienced four outages of over 100,000 CMI between April 2021 and March 2022.

On 8-Jan-22, 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 13-Jan-22, 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 11-Jul-21, 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 14-Jun-21, 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.

In total, the BERWICK 60-01 circuit had 53 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (33); equipment failure (9); nothing found (6); animal contacts (5).

Remedial Actions

- In 2022, reconductoring and line relocation will be evaluated.

- In 2022, additional fusing will be installed.
- In 2022, full circuit trimming will be performed.
- In 2022, an additional single-phase recloser will be installed.
- In 2022, several poles and cross-arms will be replaced.
- In 2022, an alternate feed for this circuit will be constructed.
- In 2023, a new line and terminal will be constructed for this circuit.

06 Circuit 47001 -- HUGHESVILLE 70-01

Performance Analysis

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

On 31-Mar-22, 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 13-Aug-21, 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 7-Jul-21, 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 103 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (62); equipment failure (22); animal contacts (15); nothing found (3); 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, voltage regulation will be installed.
- In 2022, additional single-phase reclosers will be installed.

07 Circuit 11506 -- FREEMANSBURG 15-06
Performance Analysis

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

On 21-Jan-22, an equipment failure occurred on an overhead conductor. This outage affected 1,307 customers for up to 159 minutes resulting in 204,195 CMI.

On 18-Nov-21, 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.

In total, the FREEMANSBURG 15-06 circuit had 67 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (43); equipment failure (13); animal contacts (5); 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, additional single-phase reclosers will be installed.
- In 2022, a section of this circuit will be reconfigured.
- In 2022, full circuit trimming will be performed.
- In 2022, additional fusing will be installed.
- In 2022, a section of single-phase will be evaluated for splitting.
- In 2022, extending a section of conductor will be evaluated.
- In 2022, a new substation will be evaluated that would create more transfer capability for this circuit.
- In 2024, the circuit will be split to reduce loading and improve reliability.

08 Circuit 45602 -- WOOLRICH 56-02

Performance Analysis

The WOOLRICH 56-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 11-Jul-21, during a period of heavy rain, a tree contacted a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,632 customers for up to 546 minutes resulting in 485,715 CMI.

In total, the WOOLRICH 56-02 circuit had 50 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (35); equipment failure (9); animal contacts (3); nothing found (2); vehicles (1).

Remedial Actions

- In 2021, additional animal guarding was installed, with more to be done in 2022.
- In 2022, additional fusing will be installed.
- In 2022, a section of conductor will be relocated to underground.
- In 2022, additional hazard tree removal will be performed.

09 Circuit 56504 -- ROCKVILLE 65-04

Performance Analysis

The ROCKVILLE 65-04 circuit experienced three outages of over 100,000 CMI between April 2021 and March 2022.

On 7-Sep-21, a tree contacted an overhead conductor causing an interruption. This outage affected 338 customers for up to 363 minutes resulting in 122,440 CMI.

On 10-Aug-21, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 163 customers for up to 767 minutes resulting in 105,669 CMI.

On 23-Apr-21, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,393 customers for up to 377 minutes resulting in 240,231 CMI.

In total, the ROCKVILLE 65-04 circuit had 110 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (75); equipment failure (15); animal contacts (13); other (4); vehicles (2); nothing found (1).

Remedial Actions

- In 2021, one fuse was installed.
- In 2021, a section of line was reconfigured to improve reliability.
- In 2022, additional fusing was installed.
- In 2022, one single-phase recloser was installed with two more to be installed this year.
- In 2022, additional animal guards will be installed.
- In 2022, a section of single-phase will be relocated underground.
- In 2022, full circuit trimming will be performed.
- In 2022, additional fusing will be evaluated.
- In 2023, two single-phase reclosers will be installed and protection settings will be optimized.

10 Circuit 26604 -- BROOKSIDE 66-04

Performance Analysis

The BROOKSIDE 66-04 circuit experienced three outages of over 100,000 CMI between April 2021 and March 2022.

On 31-Mar-22, during a period of heavy rain, an equipment failure occurred on an overhead conductor causing an interruption. This outage affected 1,146 customers for up to 181 minutes resulting in 201,696 CMI.

On 7-Jul-21, 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.

On 1-May-21, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 278 customers for up to 445 minutes resulting in 123,482 CMI.

In total, the BROOKSIDE 66-04 circuit had 99 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (62); equipment failure (16); animal contacts (11); nothing found (5); vehicles (3); other (2).

Remedial Actions

- In 2021, additional animal guarding was installed.
- In 2021, hazard tree removal was performed.
- In 2022, additional fusing will be installed.
- In 2022, numerous porcelain cutouts will be replaced.
- In 2022, seven single-phase reclosers will be installed.
- In 2022, additional animal guarding will be installed.
- In 2022, reconductoring will be evaluated for a section of conductor.
- In 2022, new tie lines be evaluated.
- In 2022, additional hazard tree removal will be performed.
- In 2022, the protection settings on this circuit will be evaluated and optimized.
- In 2023, three single-phase reclosers will be installed.

11 Circuit 45402 -- WEST BLOOMSBURG 54-02

Performance Analysis

The WEST BLOOMSBURG 54-02 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 14-Sep-21, 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 1-Aug-21, 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 117 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (89); equipment failure (11); animal contacts (10); nothing found (4); vehicles (2); other (1).

Remedial Actions

- In 2021, fault indicators were installed on a section of this circuit and more will be evaluated.
- In 2021, three single-phase reclosers were installed.
- In 2022, additional fusing will be installed.
- In 2022, additional animal guarding will be installed.
- In 2022, six single-phase reclosers will be installed.
- In 2022, full circuit trimming will be performed.
- In 2022, additional sectionalizing will be evaluated.

12 Circuit 20601 -- GREENWOOD 06-01

Performance Analysis

The GREENWOOD 06-01 circuit experienced four outages of over 100,000 CMI between April 2021 and March 2022.

On 19-Feb-22, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,477 customers for up to 311 minutes resulting in 146,416 CMI.

On 14-Sep-21, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 58 customers for up to 659 minutes resulting in 154,097 CMI.

On 14-Sep-21, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 989 customers for up to 1,153 minutes resulting in 202,467 CMI.

On 11-Jul-21, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 458 customers for up to 259 minutes resulting in 118,278 CMI.

In total, the GREENWOOD 06-01 circuit had 58 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (27); animal contacts (14); equipment failure (14); vehicles (2); nothing found (1).

Remedial Actions

- In 2021, an additional single-phase recloser was installed.
- In 2021, additional fusing was installed at six locations.
- In 2021, full circuit trimming was performed.
- In 2021, two additional sectionalizing devices were installed.
- In 2022, a three-phase tie to the ASHFIELD 20403 will be evaluated.
- In 2022, a single-phase tie will be installed.
- In 2023, a section of difficult-to-access single-phase will be relocated.

- In 2023, a section of difficult-to-access single-phase will be de-energized and customers will be transferred to an adjacent feeder.

13 Circuit 21901 -- HUMBOLDT 19-01

Performance Analysis

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

On 11-Jan-22, during a period of extreme temperatures, a vehicle contact occurred. This outage affected 2,600 customers for up to 563 minutes resulting in 154,841 CMI.

On 15-Sep-21, 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 14-Sep-21, 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 88 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (65); equipment failure (11); animal contacts (6); vehicles (3); other (2); nothing found (1).

Remedial Actions

- In 2021, full circuit trimming was performed, as well as removal of over 1,000 hazard trees.
- In 2022, additional fusing will be evaluated.
- In 2022, a single-phase underground tie was constructed.
- In 2023, a single-phase tie to the GIRARD MANOR 24-01 will be constructed.
- In 2023, several additional fuses will be installed.
- In 2023, eleven additional reclosers will be installed.

14 Circuit 17803 -- GILBERT 78-03

Performance Analysis

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

On 30-Oct-21, 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 61 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (38); equipment failure (12); animal contacts (9); vehicles (2).

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 reconductored.
- 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 will be performed.
- In 2022, additional animal guarding will be installed.
- In 2022, a single-phase recloser will be installed with four more to be evaluated.

15 Circuit 47002 -- HUGHESVILLE 70-02

Performance Analysis

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

In total, the HUGHESVILLE 70-02 circuit had 71 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (48); equipment failure (11); animal contacts (6); nothing found (3); vehicles (2); contact or dig in (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, a section of conductor prone to vehicle strikes will be evaluated for relocation.

16 Circuit 26001 -- WEST DAMASCUS 60-01

Performance Analysis

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

On 7-Jul-21, 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.

On 21-Jun-21, 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.

In total, the WEST DAMASCUS 60-01 circuit had 75 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (45); equipment failure (14); animal contacts (9); nothing found (5); vehicles (2).

Remedial Actions

- In 2021, a section of single-phase was reconductored.
- 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, additional animal guarding will be installed.
- In 2022, four additional single-phase reclosers with downstream fusing will be installed.
- In 2022, several poles and cross-arms will be replaced.
- In 2022, a new three-phase tie line will be evaluated.
- In 2022, hazard tree removal will be evaluated.
- In 2023, full circuit trimming will be performed.

17 Circuit 45902 -- AUBURN 59-02

Performance Analysis

The AUBURN 59-02 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the AUBURN 59-02 circuit had 66 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (43); equipment failure (10); animal contacts (9); nothing found (3); other (1).

Remedial Actions

- In 2021, additional fusing was installed with more to be done in 2022.
- In 2022, nine single-phase reclosers will be installed.
- In 2022, additional hazard tree removal will be evaluated.
- In 2022, two sections of difficult-to-access conductor will be relocated.
- In 2023, the AUBURN substation will be configured to be remotely transferrable.
- In 2023, a section of this circuit will be transferred to a new line.
- In 2023, full circuit trimming will be performed.

18 Circuit 15001 -- BLUE MOUNTAIN 50-01

Performance Analysis

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

On 9-Mar-22, 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 12-Dec-21, 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.

On 2-Sep-21, 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.

In total, the BLUE MOUNTAIN 50-01 circuit had 38 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (21); equipment failure (8); animal contacts (7); nothing found (1); vehicles (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, five additional single-phase reclosers will be installed with more to be evaluated.
- In 2022, additional fusing will be installed.
- In 2022, additional animal guarding will be installed.
- In 2022, a section of single-phase will be replaced.
- In 2022, an infrared scan will be performed.

19 Circuit 28602 -- BLYTHEBURN 86-02

Performance Analysis

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

On 4-Feb-22, 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.

On 27-Jul-21, 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.

In total, the BLYTHEBURN 86-02 circuit had 54 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (41); equipment failure (6); animal contacts (5); other (1); vehicles (1).

Remedial Actions

- In 2021, a section of three-phase was reconductored.
- In 2021, nine single-phase reclosers were 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 2022, a substation upgrade will be performed.
- In 2022, three single-phase reclosers will be installed.
- In 2022, additional animal guarding will be installed.
- In 2022, an additional Smart Grid device will be installed.
- In 2022, a new three-phase tie will be evaluated.
- In 2024, full circuit trimming will be performed.

20 Circuit 18001 -- ZIONSVILLE 80-01

Performance Analysis

The ZIONSVILLE 80-01 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 2-Sep-21, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 374 customers for up to 1,670 minutes resulting in 388,773 CMI.

On 8-Jul-21, during a period of lightning, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 681 customers for up to 490 minutes resulting in 209,052 CMI.

In total, the ZIONSVILLE 80-01 circuit had 33 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (27); animal contacts (2); vehicles (2); equipment failure (1); other (1).

Remedial Actions

- In 2021, an additional single-phase recloser was installed
- In 2022, additional fusing will be installed.
- In 2022, two additional single-phase reclosers will be installed.

- In 2022, an additional Smart Grid device will be evaluated.
- In 2023, full circuit trimming will be performed.

21 Circuit 56501 -- ROCKVILLE 65-01

Performance Analysis

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

On 24-Jan-22, 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 36 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (20); animal contacts (7); equipment failure (4); vehicles (2); contact or dig in (1); nothing found (1); other (1).

Remedial Actions

- In 2021, a section of single-phase was reconductored.
- In 2021, a section of line was re-sourced.
- In 2021, a single-phase tie was installed.
- In 2022, additional animal guarding will be installed.
- In 2022, a single-phase tie will be 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 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.

22 Circuit 64201 -- KINZER 42-01

Performance Analysis

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

On 12-Mar-22, 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.

On 15-Aug-21, 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.

In total, the KINZER 42-01 circuit had 25 outages between April 2021 and March 2022, with the causes breaking down as follows: equipment failure (11); vehicles (7); tree related (6); nothing found (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 additional three-phase sectionalizing device will be evaluated.
- In 2022, additional animal guarding was installed.

23 Circuit 17802 -- GILBERT 78-02

Performance Analysis

The GILBERT 78-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 27-Aug-21, 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.

In total, the GILBERT 78-02 circuit had 83 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (53); animal contacts (16); equipment failure (7); vehicles (4); nothing found (2); other (1).

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, 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, a single-phase recloser will be installed.
- In 2022, full circuit trimming will be performed.
- In 2022, numerous porcelain cutouts will be replaced.

24 Circuit 53601 -- DALMATIA 36-01

Performance Analysis

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

On 16-Jan-22, 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 13-Oct-21, 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 38 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (15); equipment failure (9); nothing found (8); animal contacts (4); other (1); vehicles (1).

Remedial Actions

- In 2021, a section of single-phase line was relocated.
- In 2022, a three-phase tie will be evaluated.
- In 2022, additional fusing will be installed.

25 Circuit 43401 -- BENTON 34-01

Performance Analysis

The BENTON 34-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the BENTON 34-01 circuit had 63 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (51); equipment failure (5); animal contacts (3); nothing found (3); other (1).

Remedial Actions

- In 2021, hazard tree removal was performed.
- In 2021, additional fusing was installed.
- In 2022, a section of difficult-to-access single-phase circuit will be relocated.
- In 2022, a single-phase tie will be evaluated for this circuit.
- In 2022, the protection settings for this circuit will be evaluated and optimized.
- In 2022, two single-phase reclosers will be installed.
- In 2022, additional fusing will be installed.
- In 2022, additional sectionalizing will be evaluated.

26 Circuit 56802 -- BENVENUE 68-02

Performance Analysis

The BENVENUE 68-02 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the BENVENUE 68-02 circuit had 70 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (48); equipment failure (17); animal contacts (3); nothing found (1); other (1).

Remedial Actions

- In 2021, a single-phase recloser was installed.
- In 2022, additional fusing will be installed.
- In 2022, a section of single-phase will be relocated and reconfigured.
- In 2022, two single-phase reclosers will be installed.
- In 2022, full circuit trimming will be performed.
- In 2023, a section of single-phase will be relocated to underground.

27 Circuit 45303 -- WEST BERWICK 53-03

Performance Analysis

The WEST BERWICK 53-03 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 14-Sep-21, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 745 customers for up to 718 minutes resulting in 103,265 CMI.

On 19-Aug-21, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 2,275 customers for up to 413 minutes resulting in 308,830 CMI.

In total, the WEST BERWICK 53-03 circuit had 34 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (17); equipment failure (12); animal contacts (4); nothing found (1).

Remedial Actions

- In 2022, additional animal guarding will be installed.
- In 2022, additional fusing will be installed.
- In 2022, a sectionalizing device will be upgraded to a protective device.
- In 2022, a section of difficult-to-access single-phase will be relocated to underground.
- In 2022, two additional single-phase reclosers will be installed.
- In 2025, full circuit trimming will be performed.

28 Circuit 10601 -- BLOOMING GLEN 06-01

Performance Analysis

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

In total, the BLOOMING GLEN 06-01 circuit had 78 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (53); equipment failure (12); animal contacts (7); nothing found (4); vehicles (2).

Remedial Actions

- In 2022, additional fusing was installed at seven locations with more to be performed.
- In 2022, hot spot trimming was performed.
- In 2022, full circuit trimming will be performed.
- In 2022, an infrared scan will be performed.
- In 2022, a section of this circuit will be reconductored.
- In 2022, a section of this circuit will be evaluated for relocation.
- In 2023, an additional single-phase recloser will be installed.

29 Circuit 53901 -- HALIFAX 39-01

Performance Analysis

The HALIFAX 39-01 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 19-Jul-21, during a period of strong wind, a tree contacted a pole or pole arm causing an interruption. This outage affected 693 customers for up to 658 minutes resulting in 179,554 CMI.

In total, the HALIFAX 39-01 circuit had 46 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (30); equipment failure (12); vehicles (2); animal contacts (1); nothing found (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, reconductoring at a river crossing will be evaluated.
- In 2022, additional fusing will be installed.
- In 2022, a single-phase recloser will be installed.
- In 2023, two single-phase reclosers will be installed.
- In 2024, a single-phase recloser will be installed.

30 Circuit 45302 -- WEST BERWICK 53-02

Performance Analysis

The WEST BERWICK 53-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 11-Jul-21, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 439 customers for up to 555 minutes resulting in 243,579 CMI.

In total, the WEST BERWICK 53-02 circuit had 50 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (34); equipment failure (8); nothing found (4); animal contacts (3); other (1).

Remedial Actions

- In 2022, two sections of difficult-to-access conductor were relocated.
- In 2022, a section of difficult-to-access conductor was resourced.
- In 2022, several poles and cross-arms will be replaced.
- In 2022, additional fusing will be installed.
- In 2022, full circuit trimming will be performed.
- In 2023, a section of difficult-to-access conductor will be relocated.

31 Circuit 46506 -- LOCK HAVEN 65-06

Performance Analysis

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

On 9-Oct-21, 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 48 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (36); equipment failure (7); animal contacts (4); 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, an additional Smart Grid device was installed.
- In 2022, an additional Smart Grid device will be installed.
- In 2022, additional animal guarding will be installed.

- In 2022, a section of difficult-to-access conductor will be relocated to underground.

32 Circuit 40101 -- HUNTER 01-01

Performance Analysis

The HUNTER 01-01 circuit experienced three outages of over 100,000 CMI between April 2021 and March 2022.

On 29-Aug-21, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 681 customers for up to 363 minutes resulting in 222,560 CMI.

On 29-Jun-21, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 680 customers for up to 219 minutes resulting in 148,437 CMI.

On 13-May-21, a vehicle contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 679 customers for up to 191 minutes resulting in 129,689 CMI.

In total, the HUNTER 01-01 circuit had 49 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (31); equipment failure (10); animal contacts (4); nothing found (2); other (1); vehicles (1).

Remedial Actions

- In 2021, additional animal guarding was installed.
- In 2021, a three-phase recloser was replaced.
- In 2022, a section of three-phase outside of the substation will be reconductored.
- In 2022, four single-phase reclosers will be installed.
- In 2022, a new tie line and three-phase sectionalizing device will be evaluated.
- In 2022, a three-phase sectionalizing device will be evaluated.
- In 2022, additional fusing will be installed at five locations.
- In 2024, full circuit trimming will be performed.

33 Circuit 43201 -- MILLVILLE 32-01

Performance Analysis

The MILLVILLE 32-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the MILLVILLE 32-01 circuit had 70 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (51); equipment failure (9); nothing found (6); animal contacts (2); other (1); vehicles (1).

Remedial Actions

- In 2022, two sections of difficult-to-access conductor will be relocated.
- In 2022, two additional single-phase reclosers will be installed.
- In 2022, the protection settings for this circuit will be reviewed.
- In 2023, a section of conductor will be relocated to underground.

34 Circuit 52402 -- GREEN PARK 24-02

Performance Analysis

The GREEN PARK 24-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 11-Jul-21, 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.

In total, the GREEN PARK 24-02 circuit had 84 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (48); equipment failure (16); animal contacts (14); nothing found (3); other (2); vehicles (1).

Remedial Actions

- In 2021, a section of single-phase was relocated overhead.
- 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, a new battery storage installation will be installed.
- In 2022, an additional single-phase recloser will be installed.
- In 2022, additional animal guarding will be installed.
- In 2022, a section of single-phase will be relocated overhead.
- In 2022, full circuit trimming will be performed.
- In 2022, an additional section of single-phase will be reconductored.
- In 2022, a section of single-phase will be relocated.
- In 2022, two sections of single-phase will be re-sourced to reduce exposure.
- In 2022, additional sectionalizing devices will be evaluated.
- In 2022, an analysis of tree outages versus wire size will be conducted on this circuit.
- In 2024, a new line and terminal will be installed.
- In 2024, a three-phase tie will be installed.

35 Circuit 61801 -- E ELIZABETHTOWN 18-01

Performance Analysis

The E ELIZABETHTOWN 18-01 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 9-Jul-21, during a period of strong wind, an unidentified issue occurred with a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,164 customers for up to 633 minutes resulting in 209,547 CMI.

In total, the E ELIZABETHTOWN 18-01 circuit had 41 outages between April 2021 and March 2022, with the causes breaking down as follows: equipment failure (17); tree related (15); animal contacts (3); vehicles (3); nothing found (2); other (1).

Remedial Actions

- In 2021, a single-phase recloser was installed.
- In 2021, a section of difficult-to-access single-phase was relocated.
- In 2022, seven fuses will be installed.
- In 2022, reconfiguration will be evaluated for a section of a single-phase.
- In 2023, full circuit trimming will be performed.
- In 2024, a three-phase sectionalizing device will be installed.

36 Circuit 46302 -- ROHRSBURG 63-02

Performance Analysis

The ROHRSBURG 63-02 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the ROHRSBURG 63-02 circuit had 80 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (52); animal contacts (15); equipment failure (9); nothing found (2); contact or dig in (1); other (1).

Remedial Actions

- In 2021, a sectionalizing device was relocated.
- In 2021, additional fusing was installed.
- In 2021, a section of difficult-to-access conductor was relocated with another relocation scheduled for 2022.
- In 2022, additional animal guarding will be installed.
- In 2022, additional fusing will be installed.
- In 2022, additional sectionalizing will be evaluated.
- In 2023, an additional single-phase recloser will be installed.

37 Circuit 51502 -- SWATARA 15-02

Performance Analysis

The SWATARA 15-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 30-Jun-21, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 1,511 customers for up to 535 minutes resulting in 461,418 CMI.

In total, the SWATARA 15-02 circuit had 11 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (6); equipment failure (4); nothing found (1).

Remedial Actions

- In 2021, additional animal guarding was installed.
- In 2021, full circuit trimming was performed.
- In 2021, a new tie line and three-phase sectionalizing device were installed.
- In 2022, a section of three-phase will be evaluated for relocation.

38 Circuit 16005 -- DORNEYVILLE 60-05

Performance Analysis

The DORNEYVILLE 60-05 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 26-May-21, during a period of strong wind, a tree contacted an overhead transformer causing a recloser to trip to lockout. This outage affected 146 customers for up to 1,410 minutes resulting in 205,732 CMI.

On 26-May-21, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,128 customers for up to 1,604 minutes resulting in 334,522 CMI.

In total, the DORNEYVILLE 60-05 circuit had 34 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (20); equipment failure (7); animal contacts (4); nothing found (3).

Remedial Actions

- In 2021, additional fusing was installed.
- In 2022, three additional single-phase reclosers will be installed.
- In 2022, additional fusing will be installed.
- In 2022, an infrared scan will be performed.
- In 2022, hazard tree removal will be performed.

39 Circuit 10904 -- COOPERSBURG 09-04

Performance Analysis

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

On 12-Dec-21, 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 106 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (70); animal contacts (15); equipment failure (14); nothing found (7).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, four additional single-phase reclosers will be installed with more to be evaluated.
- In 2022, a section of difficult-to-access single-phase will be relocated.
- In 2022, a new single-phase tie will be evaluated.
- In 2023, two additional single-phase reclosers will be installed.

40 Circuit 46504 -- LOCK HAVEN 65-04

Performance Analysis

The LOCK HAVEN 65-04 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the LOCK HAVEN 65-04 circuit had 51 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (39); animal contacts (5); equipment failure (4); other (2); nothing found (1).

Remedial Actions

- In 2021, additional animal guarding was installed.
- In 2022, additional Smart Grid devices will be evaluated.
- In 2022, a single-phase automated tie will be evaluated.
- In 2023, full circuit trimming will be performed.

41 Circuit 25801 -- SULLIVAN TRAIL 58-01

Performance Analysis

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

On 13-Jul-21, 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 57 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (38); equipment failure (9); animal contacts (5); nothing found (2); other (2); contact or dig in (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.

42 Circuit 54701 -- NEW BLOOMFIELD 47-01

Performance Analysis

The NEW BLOOMFIELD 47-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the NEW BLOOMFIELD 47-01 circuit had 42 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (27); animal contacts (8); equipment failure (5); nothing found (1); vehicles (1).

Remedial Actions

- In 2021, hazard tree removal was performed.
- In 2022, an additional fuse will be installed.
- In 2022, a new Smart Grid device will be installed.
- In 2022, five single-phase reclosers will be installed.
- In 2022, a single-phase tie will be installed.
- In 2022, additional hazard tree removal will be performed.
- In 2023, two sections of single-phase will be relocated underground.

43 Circuit 18502 -- CANADENSIS 85-02

Performance Analysis

The CANADENSIS 85-02 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the CANADENSIS 85-02 circuit had 88 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (50); animal contacts (20); equipment failure (12); nothing found (2); other (2); vehicles (2).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2021, additional animal guarding was installed.
- In 2021, several Smart Grid devices received communications upgrades.
- In 2021, hazard tree removal was performed.
- In 2021, tree cable was installed in a section of heavily wooded conductor.
- In 2021, additional single-phase reclosers were installed.
- In 2021, two three-phase reclosers were installed.
- In 2021, an additional Smart Grid device was installed.
- In 2022, additional single-phase reclosers will be installed.
- In 2022, a section of three-phase will be relocated.
- In 2022, additional fusing will be installed.
- In 2022, additional animal guarding will be installed.

44 Circuit 55002 -- NEWPORT 50-02

Performance Analysis

The NEWPORT 50-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 9-Mar-22, during a period of ice/sleet/snow, an equipment failure occurred on a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 764 customers for up to 147 minutes resulting in 111,620 CMI.

In total, the NEWPORT 50-02 circuit had 32 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (17); equipment failure (8); animal contacts (5); nothing found (1); vehicles (1).

Remedial Actions

- In 2022, a single-phase recloser will be installed.
- In 2022, an additional animal guard will be installed.
- In 2022, a section of three-phase was inspected by drone, and multiple remediations will be completed in 2022.

- In 2023, full circuit trimming will be performed.

45 Circuit 29501 -- LEDGEDALE 95-01

Performance Analysis

The LEDGEDALE 95-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the LEDGEDALE 95-01 circuit had 51 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (22); animal contacts (16); equipment failure (9); nothing found (4).

Remedial Actions

- In 2021, several poles were replaced.
- In 2021, two single-phase reclosers were installed.
- In 2021, a Smart Grid device was replaced.
- In 2022, two single-phase reclosers will be installed.
- In 2022, additional animal guarding will be installed.
- In 2022, a Smart Grid will be replaced.
- In 2022, several poles will be replaced.
- In 2022, additional hazard tree removal will be evaluated.
- In 2023, full circuit trimming will be performed.

46 Circuit 45002 -- LIMESTONE 50-02

Performance Analysis

The LIMESTONE 50-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 14-Aug-21, during a period of lightning, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 1,013 customers for up to 184 minutes resulting in 185,865 CMI.

In total, the LIMESTONE 50-02 circuit had 53 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (33); equipment failure (12); animal contacts (8).

Remedial Actions

- In 2021, part of this circuit was transferred to an adjacent circuit.
- In 2021, full circuit trimming was performed.
- In 2022, aerial cable will be installed on a section of this circuit.
- In 2022, a section of difficult-to-access single-phase will be relocated.
- In 2022, additional fusing will be installed.

- In 2022, several poles will be replaced.
- In 2023, multiple porcelain cutouts will be replaced.

47 Circuit 46004 -- BERWICK 60-04

Performance Analysis

The BERWICK 60-04 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 28-Jun-21, 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 36 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (17); equipment failure (8); animal contacts (6); nothing found (2); other (2); vehicles (1).

Remedial Actions

- In 2022, additional three-phase ties will be evaluated.
- In 2022, a section of single-phase in a heavily wooded area will be evaluated for remediation.
- In 2022, three single-phase reclosers will be installed.
- In 2024, full circuit trimming will be performed.

48 Circuit 13401 -- TELFORD 34-01

Performance Analysis

The TELFORD 34-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the TELFORD 34-01 circuit had 13 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (6); equipment failure (4); animal contacts (2); vehicles (1).

Remedial Actions

- In 2022, the protection settings on this circuit will be optimized.
- In 2022, several reclosers will be evaluated for conversion to single-phase operation.
- In 2022, several pole relocations will be evaluated.
- In 2023, full circuit trimming will be performed.

49 Circuit 21206 -- EAST CARBONDALE 12-06

Performance Analysis

The EAST CARBONDALE 12-06 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 4-Dec-21, 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 18 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (7); equipment failure (5); other (3); animal contacts (2); vehicles (1).

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 2023, three single-phase reclosers will be installed.
- In 2023, numerous porcelain cutouts will be replaced.

50 Circuit 26401 -- INDIAN ORCHARD 64-01

Performance Analysis

The INDIAN ORCHARD 64-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the INDIAN ORCHARD 64-01 circuit had 94 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (45); animal contacts (24); equipment failure (21); nothing found (3); vehicles (1).

Remedial Actions

- In 2021, three single-phase reclosers were installed.
- In 2021, additional animal guarding was installed.
- In 2022, additional animal guarding will be installed.
- In 2022, numerous porcelain cutouts will be replaced.
- In 2022, a section of conductor will be reconductoring and relocated.
- In 2022, additional fusing will be installed.
- In 2022 and 2023, six additional single-phase reclosers will be installed.

51 Circuit 40901 -- JERSEY SHORE 09-01

Performance Analysis

The JERSEY SHORE 09-01 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 13-Jul-21, during a period of heavy rain, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 558 customers for up to 341 minutes resulting in 107,156 CMI.

In total, the JERSEY SHORE 09-01 circuit had 48 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (36); equipment failure (8); animal contacts (2); nothing found (2).

Remedial Actions

- In 2021, hazard tree removal was performed.
- In 2021, a sectionalizing device was replaced.
- In 2021, additional animal guarding was installed.
- In 2022, a transformer cutout will be replaced.
- In 2022, a three-phase section of this line will be transferred to an adjacent circuit.
- In 2023, additional fusing will be installed.
- In 2023, full circuit trimming will be performed.

52 Circuit 16402 -- MOUNT POCONO 64-02

Performance Analysis

The MOUNT POCONO 64-02 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the MOUNT POCONO 64-02 circuit had 56 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (34); animal contacts (9); equipment failure (6); vehicles (6); nothing found (1).

Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2021, several dissimilar metal connections were remediated.
- In 2021, an additional single-phase recloser was installed.
- In 2021, a Smart Grid device was replaced.
- In 2021, additional animal guarding was installed.
- In 2022, additional fusing will be installed.
- In 2022, four single-phase reclosers will be installed.
- In 2022, two sections of difficult-to-access three-phase will be relocated.
- In 2022, an existing recloser will be replaced.

- In 2022, additional animal guarding will be installed.

53 Circuit 16101 -- BINGEN 61-01

Performance Analysis

The BINGEN 61-01 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 28-Jan-22, during a period of ice/sleet/snow, an equipment failure occurred on an overhead transformer causing an interruption. This outage affected 949 customers for up to 110 minutes resulting in 104,462 CMI.

In total, the BINGEN 61-01 circuit had 66 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (46); equipment failure (9); animal contacts (6); nothing found (2); contact or dig in (1); other (1); vehicles (1).

Remedial Actions

- In 2022, full circuit trimming will be performed.
- In 2022, an additional single-phase recloser will be installed with another to be evaluated.
- In 2022, additional animal guarding will be installed.

54 Circuit 23301 -- JEFFERSON 33-01

Performance Analysis

The JEFFERSON 33-01 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 8-Mar-22, during a period of strong wind, a tree contacted a pole or pole arm causing a recloser to trip to lockout. This outage affected 159 customers for up to 1,708 minutes resulting in 178,340 CMI.

On 24-Apr-21, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 568 customers for up to 414 minutes resulting in 208,509 CMI.

In total, the JEFFERSON 33-01 circuit had 35 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (14); equipment failure (10); animal contacts (4); contact or dig in (3); vehicles (2); nothing found (1); other (1).

Remedial Actions

- In 2021, an existing recloser was replaced.
- In 2022, additional animal guarding will be installed.
- In 2022, an existing recloser will be replaced.
- In 2022, several poles will be replaced.

55 Circuit 42401 -- GIRARD MANOR 24-01

Performance Analysis

The GIRARD MANOR 24-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the GIRARD MANOR 24-01 circuit had 52 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (38); equipment failure (5); animal contacts (4); nothing found (3); vehicles (2).

Remedial Actions

- In 2021, two additional fuses were installed.
- In 2021, four single-phase reclosers were installed.
- In 2021, full circuit trimming was performed.
- In 2022, the circuit breaker settings will be reviewed for coordination with downstream sectionalizer.
- In 2022, a single-phase tie will be evaluated.
- In 2022, additional single-phase fusing will be evaluated.
- In 2023, a single-phase tie will be constructed to the HUMBOLDT 19-01.

56 Circuit 29503 -- LEDGEDALE 95-01

Performance Analysis

The LEDGEDALE 95-01 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 7-Jul-21, during a period of heavy rain, an equipment failure occurred on an overhead conductor causing a recloser to trip to lockout. This outage affected 1,147 customers for up to 376 minutes resulting in 268,299 CMI.

In total, the LEDGEDALE 95-01 circuit had 27 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (19); equipment failure (5); nothing found (2); animal contacts (1).

Remedial Actions

- In 2021, a single-phase recloser was installed.
- In 2021, fusing was installed at seven locations.
- In 2022, additional animal guarding will be installed.
- In 2022, two single-phase reclosers with downstream fusing will be installed.
- In 2022, a section of underground conductor will be replaced.
- In 2023, full circuit trimming will be performed.

57 Circuit 43701 -- WILLIAMSPORT 37-01

Performance Analysis

The WILLIAMSPORT 37-01 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 16-Jul-21, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 564 customers for up to 568 minutes resulting in 271,075 CMI.

On 30-Jun-21, during a period of extreme temperatures, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 986 customers for up to 245 minutes resulting in 158,752 CMI.

In total, the WILLIAMSPORT 37-01 circuit had 17 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (7); equipment failure (5); animal contacts (4); nothing found (1).

Remedial Actions

- In 2021, the protection settings for this circuit were reviewed and optimized.
- In 2021, additional animal guarding was installed with more scheduled for 2022.
- In 2022, an infrared scan will be performed on this circuit.

58 Circuit 11003 -- EAST GREENVILLE 10-03

Performance Analysis

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

In total, the EAST GREENVILLE 10-03 circuit had 20 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (11); equipment failure (7); nothing found (1); vehicles (1).

Remedial Actions

- In 2022, an additional Smart Grid device will be evaluated.

- In 2023, a section of difficult-to-access single-phase line will be relocated.
- In 2025, full circuit trimming will be performed.

59 Circuit 44802 -- EAST DANVILLE 48-02

Performance Analysis

The EAST DANVILLE 48-02 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 15-Sep-21, a vehicle contact caused a circuit breaker to trip to lockout. This outage affected 1,200 customers for up to 1,040 minutes resulting in 526,629 CMI.

In total, the EAST DANVILLE 48-02 circuit had 36 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (20); equipment failure (10); animal contacts (3); nothing found (2); vehicles (1).

Remedial Actions

- In 2022, a section of difficult-to-access conductor will be relocated.
- In 2022, two single-phase reclosers will be installed.
- In 2023, full circuit trimming will be performed.

60 Circuit 12701 -- MACUNGIE 27-01

Performance Analysis

The MACUNGIE 27-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the MACUNGIE 27-01 circuit had 58 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (41); animal contacts (5); equipment failure (5); nothing found (5); vehicles (2).

Remedial Actions

- In 2022, a line patrol was performed with minor remediations implemented.
- In 2022, an infrared scan will be performed.
- In 2024, full circuit trimming will be performed.

61 Circuit 27504 -- WEISSPORT 75-04

Performance Analysis

The WEISSPORT 75-04 circuit experienced one outage of over 100,000 CMI between April 2021 and March 2022.

On 17-Nov-21, an equipment failure occurred on an overhead switch causing a circuit breaker to trip to lockout. This outage affected 1,516 customers for up to 104 minutes resulting in 157,027 CMI.

In total, the WEISSPORT 75-04 circuit had 16 outages between April 2021 and March 2022, with the causes breaking down as follows: equipment failure (5); animal contacts (4); other (3); tree related (3); contact or dig in (1).

Remedial Actions

- In 2021, a Smart Grid device was replaced.
- In 2021, two single-phase reclosers were installed.
- In 2021, additional fusing was installed.
- In 2021, a section of three-phase conductor was rebuilt.
- In 2022, additional single-phase sectionalizing will be evaluated.
- In 2024, full circuit trimming will be performed.

62 Circuit 48301 -- ORWIGSBURG 83-01

Performance Analysis

The ORWIGSBURG 83-01 circuit experienced no outages of over 100,000 CMI between April 2021 and March 2022.

In total, the ORWIGSBURG 83-01 circuit had 34 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (21); equipment failure (5); animal contacts (4); nothing found (2); vehicles (2).

Remedial Actions

- In 2021, a single-phase recloser was replaced.
- In 2022, additional fusing will be evaluated for this circuit.
- In 2022, a single-phase tie will be evaluated.
- In 2023, a single-phase recloser will be replaced.
- In 2023, a single-phase recloser will be installed.
- In 2025, full circuit trimming will be performed.

63 Circuit 57502 -- LAWNTON 75-02

Performance Analysis

The LAWNTON 75-02 circuit experienced two outages of over 100,000 CMI between April 2021 and March 2022.

On 2-Mar-22, an equipment failure occurred on an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 634 customers for up to 3 minutes resulting in 186,817 CMI.

On 30-Jun-21, during a period of strong wind, a tree contacted a pole or pole arm causing a circuit breaker to trip to lockout. This outage affected 1,534 customers for up to 139 minutes resulting in 115,408 CMI.

In total, the LAWNTON 75-02 circuit had 13 outages between April 2021 and March 2022, with the causes breaking down as follows: tree related (6); equipment failure (5); animal contacts (1); other (1).

Remedial Actions

- In 2022, additional fusing will be installed.
- In 2022, an additional three-phase sectionalizing device was installed.
- In 2022, resourcing several sections of single-phase will be evaluated.
- In 2022, additional sectionalizing devices will be evaluated.

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

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

Cause Description	Trouble Cases	Percent of Trouble Cases	Customer Interruptions	Percent of Customer Interruptions	Customer Minutes	Percent of Customer Minutes
Animals	3,692	14.3%	62,431	4.4%	4,074,098	1.5%
Contact / Dig-In	158	0.6%	12,944	0.9%	670,196	0.2%
Directed by Non-PPL Authority	62	0.2%	8,871	0.6%	704,835	0.3%
Equipment Failures	5,800	22.4%	306,813	21.8%	35,349,218	13.2%
Improper Design	1	0.0%	759	0.1%	15,901	0.0%
Improper Installation	2	0.0%	64	0.0%	7,067	0.0%
Improper Operation	4	0.0%	1,528	0.1%	11,181	0.0%
Nothing Found	1,089	4.2%	74,052	5.3%	7,987,254	3.0%
Other Controllable	83	0.3%	9,023	0.6%	760,096	0.3%
Other Non Control	258	1.0%	24,447	1.7%	2,426,200	0.9%
Other Public	32	0.1%	5,237	0.4%	617,433	0.2%
Tree Related	13,841	53.5%	768,033	54.5%	199,218,240	74.2%
Unknown	2	0.0%	1,239	0.1%	210,492	0.1%
Vehicles	827	3.2%	134,082	9.5%	16,299,757	6.1%
Total	**25,851**	**100.0%**	**1,409,523**	**100.0%**	**268,351,968**	**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 59% of cases, 63% of customer interruptions, and 81% 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 85% of the cases of trouble, 86% of the customer interruptions and 94% of the customer minutes attributed to tree related outages were weather-related.

Animals: Animals accounted for approximately 14% of PPL Electric's cases of trouble. Although this represents a significant number of cases, the effect on SAIFI and CAIDI is small because approximately 73% of the number of cases of trouble were associated with individual distribution transformers. However, when animal contacts affect substation equipment, the effect may be widespread and potentially can interrupt thousands of customers on multiple circuits. In addition to guarding new distribution transformers and substations, PPL Electric initiated distribution and substation animal guarding programs in 2009 to focus systematically on protecting existing facilities most at risk of incurring animal-caused interruptions. A complete effectiveness review of this strategy is being evaluated.

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

Equipment Failure: Equipment failure is one of the largest single contributors to the number of cases of trouble, customer interruptions and customer minutes. However, approximately 42% of the cases of trouble, 46% of the customer interruptions and 58% of the customer minutes attributed to equipment failure were weather-related and, as such, are not considered to be strong indicators of equipment condition or performance.

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

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

Inspection & Maintenance Goals/Objectives	Annual Budget	1st Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Transmission					
Transmission C-tag poles (# of poles)	61	5	5	5	5
Transmission arm replacements (# of arms)	36	3	3	3	3
Transmission air break switch inspections (# of switches)	1	-	-	-	-
Transmission surge arrester installations (# of sets)	419	26	26	26	26
Transmission structure inspections (# of activities)	15,988	1,977	1,977	1,977	1,977
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	821	411	406	821	406
Transmission reclearing (# of miles) 69 kV	1,628	407	614	1628	614
Transmission reclearing (# of miles) 138 kV	90	20	48	90	48
Transmission danger tree removals-Bulk Power (# of trees)	N/A				
Substation					
Substation batteries (# of activities)	323	214	219	214	219
Circuit breakers (# of activities)	296	0	2	0	2
Substation inspections (# of activities)	1,256	365	364	365	364
Transformer maintenance (# of activities)	797	9	6	9	6

Inspection & Maintenance Goals/Objectives	Annual Budget	1st Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
Distribution					
Distribution C-tag poles replaced (# of poles)	2564	500	279	500	279
C-truss distribution poles (# of poles)	3,740	350	272	350	272
Capacitor (MVAR added)	N/A	5.8	5.8	5.8	5.8
OCR Replacements (# of)	0	0	8	0	8
Distribution pole inspections (# of poles)	74,806	13,000	13,290	13,000	13,290
Distribution line inspections (miles)	2,200	0	0	0	0
Group re-lamping (# of lamps)	18,720	0	0	0	0
Test sections of underground distribution cable	N/A	112	112	112	112
Distribution tree trimming (# of miles)	4,288	1,098	1,123	4,288	1,123
Distribution herbicide (# of acres)	N/A				
Distribution >18” removals within R/W (# of trees)	N/A				
Distribution hazard tree removals outside R/W (# of trees)	N/A				
LTN manhole inspections (# of)	387	97	157	97	157
LTN vault inspections (# of)	299	75	99	75	99
LTN network protector overhauls (# of)	60	15	15	15	15
LTN reverse power trip testing (# of)	25	6	4	6	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		1st Quarter		Year-to-date	
	2022 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
Provide Electric Service	5,799	1,311	2,054	1,311	2,054
Vegetation Management	33,292	8,903	10,620	8,903	10,620
Customer Response	60,906	12,446	24,593	12,446	24,593
Reliability Maintenance	21,217	6,035	8,391	6,035	8,391
System Upgrade	3,870	973	195	973	195
Customer Service/Accounts	109,576	26,960	34,352	26,960	34,352
Others	63,970	16,176	19,662	16,176	19,662
Total O&M Expenses	**298,629**	**72,805**	**99,868**	**72,805**	**99,868**

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		1st Quarter		Year-to-date	
	2022 Budget (000s)	Budget ($000)	Actual ($000)	Budget ($000)	Actual ($000)
New Service/Revenue	92,169	22,630	30,056	22,630	30,056
System Upgrade	205,389	62,544	48,445	62,544	48,445
Reliability & Maintenance	500,801	123,657	121,825	123,657	121,825
Customer Response	34,262	6,820	17,573	6,820	17,573
Other	27,172	8,091	7,071	8,091	7,071
Total	**859,793**	**22,630**	**30,056**	**22,630**	**30,056**

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 1st quarter of 2022, 110 corrective work orders were created with the following breakdown by priority.

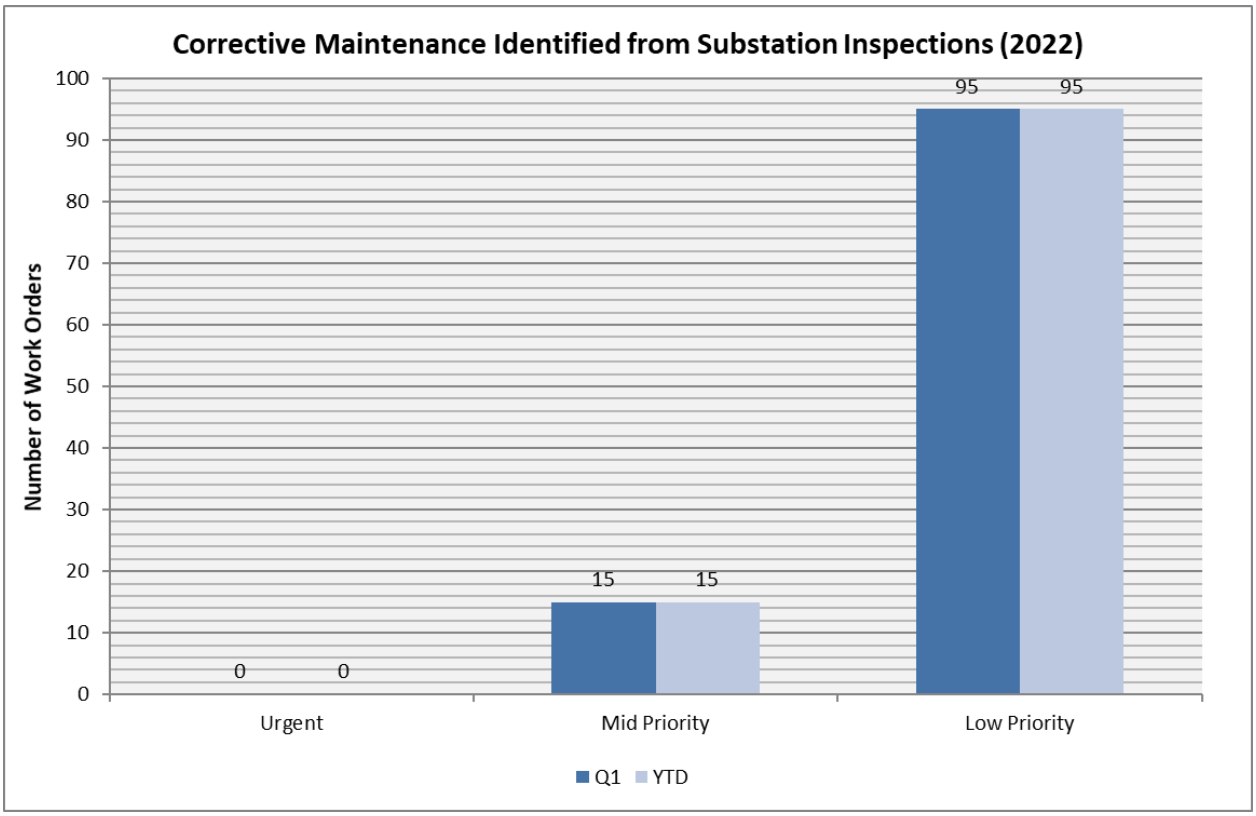


Figure 1: Corrective Maintenance Work Orders by Priority Level for 1st Quarter and Year-to-Date 2022

(b) The Amount Spent on Substation Inspections

During the 1st quarter of 2022, PPL Electric Utilities spent approximately $134,000 on substation inspections.

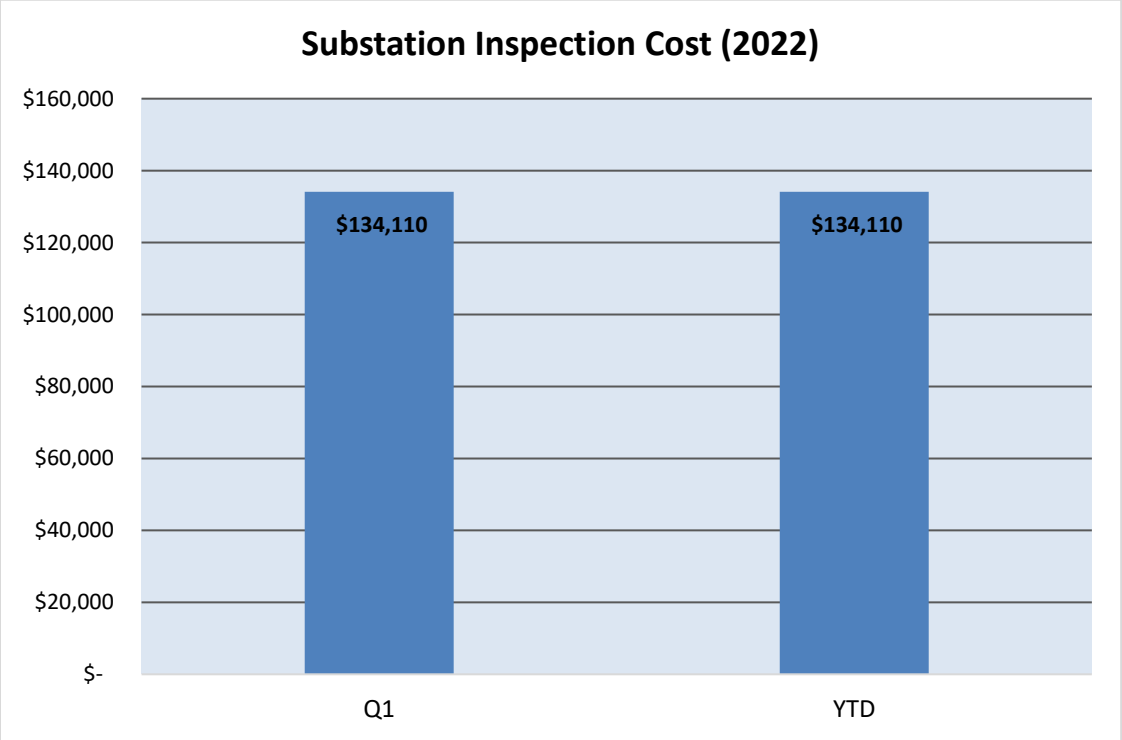


Figure 2: Substation Inspection Costs for 1st Quarter and Year-to-Date 2022

(c) The Amount Spent on Vegetation Management

Please refer to Section 7 for vegetation management expenses for the 1st quarter and year-to-date 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 1st quarter and year-to-date. During the 1st quarter of 2022, PPL Electric Utilities avoided a projected 141,000 CMI.

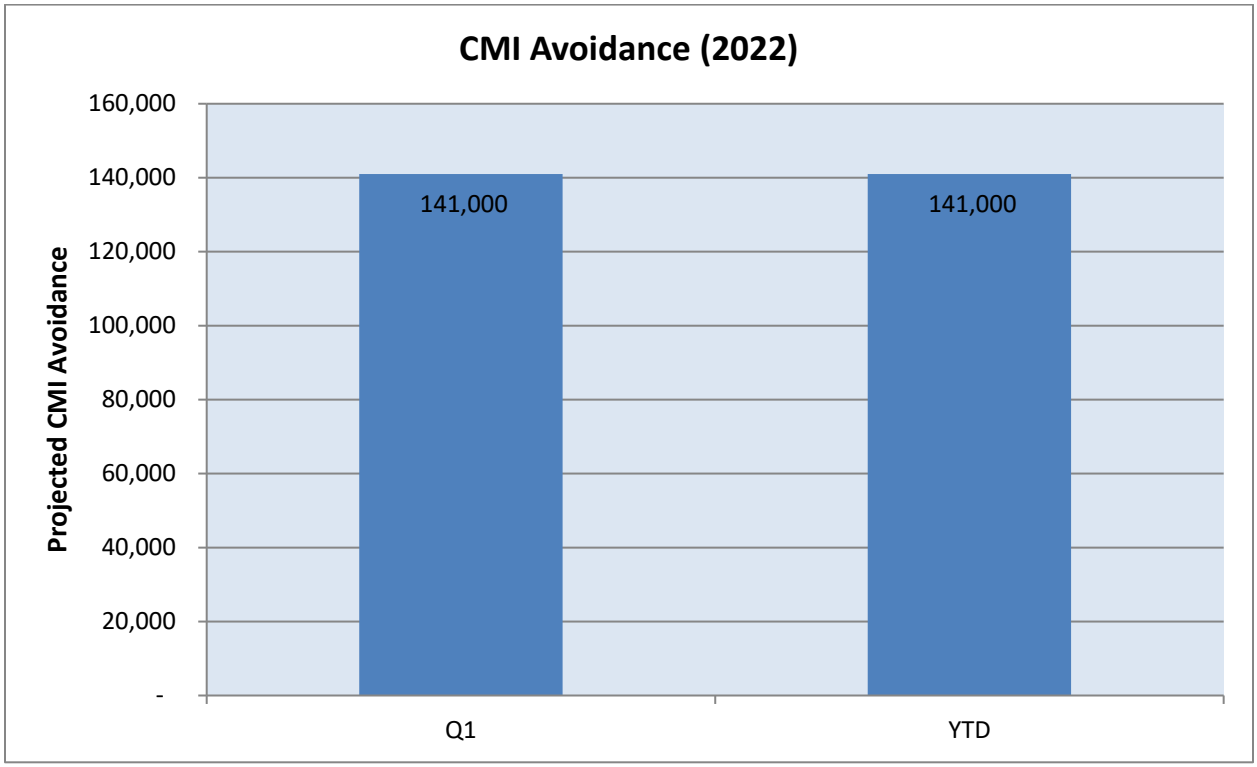


Figure 3: Projected CMI Avoidance Due to Substation Inspections for 1st Quarter and Year-to-Date 2022

(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 1st quarter of 2022, the Company interrupted approximately 3,000 customers for a total of 24,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.

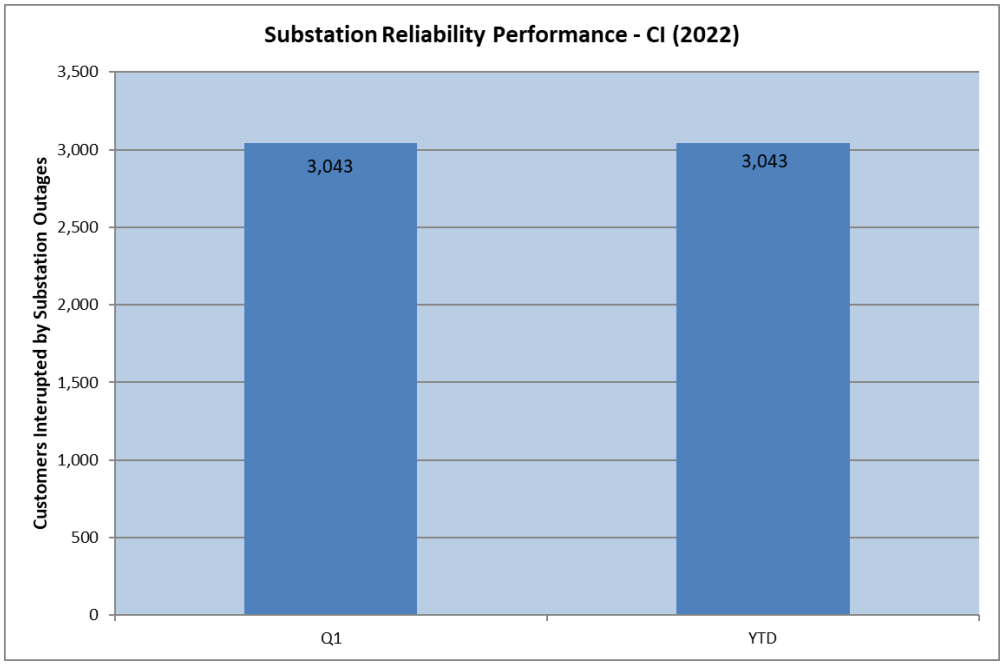


Figure 4: Substation Customers Interrupted for 1st Quarter and Year-to-Date 2022

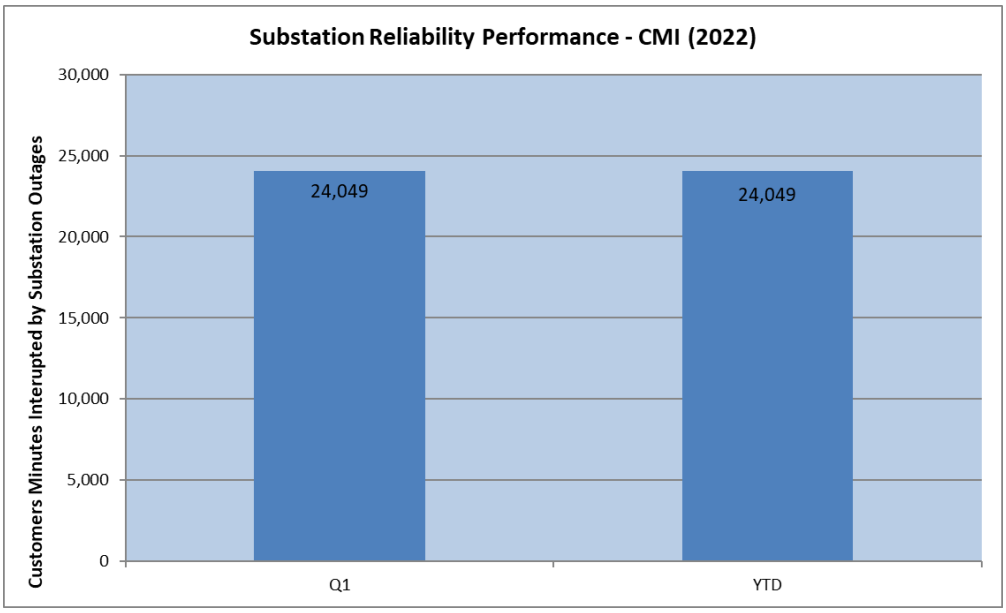


Figure 5: Substation Customer Minutes of Interruption for 1st Quarter and Year-to-Date 2022

(f) Substation SAIFI Contribution

Overall, substation outages contributed approximately 0.9% of the total SAIFI experienced by PPL Electric customers in the 1st 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.

	1st Quarter	Year-to-Date
Substations with Remote Monitoring	354	354
Total Number of Substations	356	356

PPL Electric has launched a project to install smart relaying onto all 12kV circuit breakers at its distribution substations. These relays will allow the Company to quickly perform automated switching for lesser system impact during an outage event, and better-estimate fault locations for quicker system restoration. By 2022, the Company expects all 12kV circuit breakers to have these functionalities 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	66
Journeyman Lineman	136
Journeyman Lineman-Trainee	62
Helper	38
Groundhand	0
Troubleman	52
T&D Total	**354**
Electrical	
Elect Leaders-UG	2
Elect Leaders-Net	8
Elect Leaders-Sub	20
Journeyman Elect-UG	8
Journeyman Elect-Net	28
Journeyman Elect-Sub	41
Electrical Total	**107**
Overall Total	**461**

Appendix A

PPL Electric Utilities Corporation

Worst Performing Circuit Definition

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

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

Appendix B

PPL Electric Utilities Corporation

Job Descriptions

Transmission and Distribution

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

Appendix B

Electrical

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

Appendix B

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