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**E-FILE**

August 1, 2022

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

**Re: PPL Electric Utilities Corporation  
Quarterly Reliability Report for the  
Period Ended June 30, 2022  
Docket No. M-2016-2522508**

Dear Ms. Chiavetta:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric") is the **NON-CONFIDENTIAL** version of PPL Electric's Quarterly Reliability Report for the Period Ended June 30, 2022. The report is being filed pursuant to 52 Pa. Code § 57.195(d).

Pursuant to 52 Pa. Code § 1.11, the enclosed document is to be deemed filed on August 1, 2022, which is the date it was filed electronically with the Commission's E-Filing System.

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

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

Respectfully submitted,

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

Kimberly A. Klock

Enclosures

cc via email: Patrick Cicero, Esquire  
Steven Gray, Esquire

Mr. Daniel Searfoorce  
Mr. Harry Bidelspach



**PPL Electric Utilities Corporation**  
**Quarterly Reliability Report**  
**to the**  
**Pennsylvania Public Utility Commission**

*July 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 second 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 June 30, 2022.

SAIFI	BM 0.98	0.96
	STD 1.18	0.96
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	BM 145	191
	STD 174	191
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	BM 142	183
	STD 205	183
MAIFI		1.7
Average Number of Customers Served <sup>1</sup>		1,448,048
Number of Sustained Customer Interruptions (Trouble Cases)		26,429
Number of Customers Affected <sup>2</sup>		1,383,613
Customer Minutes of Interruptions (CMI)		265,518,029
Number of Customer Momentary Interruptions		2,392,043

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<sup>1</sup> 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.

<sup>2</sup> 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 second quarter, there were no (0) PUC major events, one (1) PUC reportable events, and seven (7) 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 Q2 2022, we have 46 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.

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<sup>3</sup>. 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 6/30/2022	127	0.73	93
IEEE First Quartile Ceiling	98	0.82	84
IEEE Second Quartile Ceiling	108	1.06	103

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<sup>3</sup> Quartile cutoffs are expected to be revised upward for 2021.

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

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

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
1	26604	688	167	4.12	3.9	2,412	128	1,661,585
2	20403	687	198	3.47	0.0	1,943	120	1,336,373
3	47704	922	228	4.04	3.3	1,392	99	1,283,920
4	29402	592	128	4.64	0.0	1,708	61	1,012,284
5	11506	657	130	5.06	2.1	1,301	74	854,951
6	47001	703	370	1.90	13.1	2,506	101	575,803
7	45402	674	243	2.78	5.7	1,644	127	1,108,924
8	46001	484	151	3.21	1.4	2,360	74	1,142,474
9	55001	608	155	3.91	2.8	1,261	154	767,663
10	15001	555	149	3.73	11.1	1,389	40	771,121
11	20601	614	223	2.75	3.7	1,476	71	907,375
12	17803	468	139	3.37	5.4	1,649	65	771,863
13	17802	461	163	2.84	4.6	1,968	95	909,164
14	28602	389	109	3.57	18.8	1,948	62	757,918
15	47002	391	120	3.26	2.5	2,019	81	789,752
16	45303	469	153	3.07	0.0	1,355	37	636,697
17	45302	576	218	2.64	6.6	1,225	57	705,748
18	56504	502	267	1.88	0.5	1,988	112	999,647
19	18001	1,141	260	4.38	0.8	694	33	792,330
20	21901	366	171	2.15	2.4	2,610	102	957,804
21	45602	380	177	2.14	0.8	2,431	54	924,599
22	52402	371	118	3.13	2.4	1,691	89	627,955
23	54701	424	129	3.29	10.9	1,126	44	478,152
24	22404	416	105	3.98	2.1	883	16	367,341

WPC Rank	Feeder ID	SAIDI	CAIDI	SAIFI	MAIFI	Customers	Cases of Trouble	Customer Minutes Interrupted (CMI)
25	20402	435	181	2.41	3.9	1,626	45	708,882
26	26001	799	432	1.85	0.8	1,441	91	1,151,948
27	56501	348	205	1.70	1.5	2,356	60	822,185
28	51104	376	181	2.08	2.5	1,752	17	659,813
29	56802	523	274	1.91	8.1	1,538	80	804,928
30	27102	524	165	3.18	8.5	896	50	470,284
31	64201	271	91	2.98	5.0	1,900	30	516,138
32	55002	465	124	3.76	4.0	761	37	354,379
33	59101	290	114	2.54	3.2	1,714	49	497,381
34	43201	579	224	2.59	5.1	980	77	568,129
35	10601	282	116	2.43	0.7	1,729	94	488,828
36	45902	367	157	2.33	0.8	1,347	72	495,025
37	45002	320	138	2.32	4.4	1,446	63	463,542
38	46506	286	119	2.40	1.4	1,636	55	468,449
39	59301	260	74	3.52	2.5	1,458	34	380,500
40	53901	340	144	2.36	1.1	1,340	53	456,295
41	10904	330	183	1.81	0.5	1,763	113	582,927
42	61801	268	100	2.69	2.4	1,618	47	434,570
43	53601	384	151	2.54	6.0	1,123	44	431,591
44	24401	349	149	2.34	1.1	1,274	54	444,730
45	54202	256	128	2.00	4.8	2,079	25	533,102
46	21206	278	202	1.38	1.4	2,465	19	686,358
47	42401	536	168	3.18	4.3	716	52	383,779
48	13503	228	65	3.52	11.1	1,494	34	341,541
49	25801	310	190	1.63	0.8	1,840	68	571,573
50	29501	320	127	2.52	5.3	1,095	53	351,055
51	43401	386	158	2.45	13.7	997	69	385,608
52	64304	227	80	2.83	2.4	1,397	29	317,848
53	42701	331	186	1.78	5.4	1,465	80	486,210
54	16801	245	126	1.94	0.1	1,652	54	405,589
55	46302	518	275	1.88	4.4	1,098	91	569,692
56	41602	527	222	2.38	1.5	848	69	446,978
57	55401	473	156	3.03	1.1	688	7	326,050
58	46504	203	87	2.34	1.0	1,913	56	389,302
59	40901	298	134	2.22	1.2	1,149	53	343,088
60	29503	444	247	1.80	1.9	1,148	32	509,741
61	16402	269	129	2.09	1.3	1,278	64	344,490
62	27004	443	196	2.26	1.1	903	16	400,118
63	16101	222	105	2.11	0.4	1,506	68	335,618

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

01 Circuit 26604 -- BROOKSIDE 66-04

Performance Analysis

The BROOKSIDE 66-04 circuit experienced five outages of over 100,000 CMI between July 2021 and June 2022.

On 31-Mar-22, during a period of heavy rain, an equipment failure occurred 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 an interruption. 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.

On 16-May-22, during a period of strong wind, a tree contacted an overhead switch causing a recloser to trip to lockout. This outage affected 1,140 customers for up to 250 minutes resulting in 100,881 CMI.

On 16-Apr-22, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,146 customers for up to 609 minutes resulting in 697,719 CMI.

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

Remedial Actions

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

- In 2022, an additional line and terminal and tie line will be evaluated.
- In 2023, a section of difficult-to-access three-phase conductor will be relocated.
- In 2023, five single-phase reclosers will be installed.

## 02 Circuit 20403 -- ASHFIELD 04-03

### Performance Analysis

The ASHFIELD 04-03 circuit experienced three outages of over 100,000 CMI between July 2021 and June 2022.

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.

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 7-Jun-22, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 153 customers for up to 691 minutes resulting in 104,529 CMI.

In total, the ASHFIELD 04-03 circuit had 94 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (51); equipment failure (17); animal contacts (13); nothing found (7); vehicles (5); 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, 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 single-phase tie will be installed on this circuit.
- In 2023, a section of single-phase will be extended.

## 03 Circuit 47704 -- BLOOMSBURG 77-04

### Performance Analysis

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

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 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 28-Oct-21, during a period of strong wind, an equipment failure occurred causing an interruption. This outage affected 268 customers for up to 1,690 minutes resulting in 137,560 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 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 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 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 107 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (68); equipment failure (18); animal contacts (14); nothing found (4); other (2); vehicles (1).

#### Remedial Actions

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

## 04 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 July 2021 and June 2022.

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 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.

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 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.

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

### Remedial Actions

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

## 05 Circuit 11506 -- FREEMANSBURG 15-06

### Performance Analysis

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

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.

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

In total, the FREEMANSBURG 15-06 circuit had 77 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (49); equipment failure (16); animal contacts (6); vehicles (3); nothing found (2); contact or dig in (1).

### Remedial Actions

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

## 06 Circuit 47001 -- HUGHESVILLE 70-01

### Performance Analysis

The HUGHESVILLE 70-01 circuit experienced three outages of over 100,000 CMI between July 2021 and June 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 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.

On 13-Aug-21, during a period of strong wind, an equipment failure occurred causing a recloser to trip to lockout. This outage affected 833 customers for up to 602 minutes resulting in 130,480 CMI.

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

#### Remedial Actions

- In 2021, addition fusing was installed.
- In 2021, several transformer cutouts were replaced.
- In 2021, a single-phase recloser was relocated.
- In 2022, additional single-phase reclosers were installed.
- In 2022, voltage regulation will be installed.

07 Circuit 45402 -- WEST BLOOMSBURG 54-02

#### Performance Analysis

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

On 24-Apr-22, during a period of strong wind, a tree contacted an overhead conductor causing an interruption. This outage affected 287 customers for up to 469 minutes resulting in 134,468 CMI.

On 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.

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.

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

#### Remedial Actions

- In 2021, fault indicators were installed on a section of this circuit with more to 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.
- In 2022, a single-phase tie will be evaluated.

## 08 Circuit 46001 -- BERWICK 60-01

### Performance Analysis

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

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.

On 8-Jan-22, during a period of extreme temperatures, an equipment failure occurred 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 8-Apr-22, an equipment failure occurred causing a recloser to trip to lockout. This outage affected 576 customers for up to 230 minutes resulting in 119,691 CMI.

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

### Remedial Actions

- In 2022, reconductoring and relocation will be evaluated for a section of this circuit.
- 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, a section of difficult-to-access conductor will be eliminated, and the downstream customers transferred to an adjacent circuit.
- In 2022, several poles and cross-arms will be replaced.
- In 2023, a new three-phase tie will be constructed.
- In 2023, an alternate feed for this circuit will be constructed.
- In 2023, a new line and terminal will be constructed for this circuit.

## 09 Circuit 55001 -- NEWPORT 50-01

### Performance Analysis

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

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.

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

### Remedial Actions

- In 2021, an additional single-phase recloser was installed.
- In 2021, three additional fuses were installed.
- In 2022, a 2.1-mile section of three-phase conductor in a heavily wooded area was relocated.
- In 2022, two fuses were installed with one more to be installed this year.
- In 2022, a section of single-phase was reconductored.
- In 2022, a single-phase tie will be evaluated.
- In 2023, an additional three-phase sectionalizing device will be installed.
- In 2023, a section of single-phase will be resourced.
- In 2024, a section of single-phase will be reconductored.

## 10 Circuit 15001 -- BLUE MOUNTAIN 50-01

### Performance Analysis

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

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.

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

#### Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, one additional single-phase recloser was installed with five more to be installed this year.
- 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.

#### 11 Circuit 20601 -- GREENWOOD 06-01

#### Performance Analysis

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

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.

In total, the GREENWOOD 06-01 circuit had 65 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (30); animal contacts (17); equipment failure (14); vehicles (3); 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, an additional sectionalizing device was installed on a section of difficult-to-access conductor.
- In 2022, a single-phase tie will be constructed.
- In 2022, a section of difficult-to-access conductor will be relocated.
- In 2022, a three-phase tie to the ASHFIELD 04-03 will be evaluated.
- 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.

## 12 Circuit 17803 -- GILBERT 78-03

### Performance Analysis

The GILBERT 78-03 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 71 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (42); equipment failure (14); animal contacts (11); vehicles (3); Improper Operation (1).

### Remedial Actions

- In 2021, additional animal guarding was performed.
- In 2021, additional fusing was installed.
- In 2021, 10 poles were replaced.
- In 2021, several sections of conductor were relocated and reconducted.
- 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 and 2023, five single-phase reclosers will be installed.

## 13 Circuit 17802 -- GILBERT 78-02

### Performance Analysis

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

On 18-Jun-22, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 621 customers for up to 344 minutes resulting in 213,127 CMI.

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

### Remedial Actions

- In 2021, hot spot trimming was performed.
- In 2021, four single-phase reclosers were installed.
- In 2021, a Smart Grid device was replaced.
- In 2021, a section of difficult-to-access conductor was relocated.
- In 2021, five transformers were replaced.
- In 2022, 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.

## 14 Circuit 28602 -- BLYTHEBURN 86-02

### Performance Analysis

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

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.

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.

In total, the BLYTHEBURN 86-02 circuit had 65 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (46); equipment failure (9); animal contacts (6); vehicles (2); nothing found (1); other (1).

#### Remedial Actions

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

15 Circuit 47002 -- HUGHESVILLE 70-02

#### Performance Analysis

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

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

#### Remedial Actions

- In 2021, an additional sectionalizing device was installed.
- In 2021, a section of difficult-to-access conductor was relocated.
- In 2021, additional animal guarding was installed.
- In 2021, additional fusing was installed.
- In 2021, an additional single-phase recloser was installed.
- In 2022, a section of difficult-to-access conductor will be evaluated for undergrounding.
- In 2022, an existing cutout will be replaced.

## 16 Circuit 45303 -- WEST BERWICK 53-03

### Performance Analysis

The WEST BERWICK 53-03 circuit experienced three outages of over 100,000 CMI between July 2021 and June 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-May-22, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 757 customers for up to 230 minutes resulting in 166,644 CMI.

On 19-Aug-21, an equipment failure occurred 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 40 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (18); equipment failure (15); animal contacts (6); nothing found (1).

### Remedial Actions

- In 2022, a sectionalizing device was upgraded to a protective device.
- In 2022, additional animal guarding will be installed.
- In 2022, additional fusing will be installed.
- In 2022, a section of difficult-to-access single-phase will be relocated to underground.
- In 2023, two additional single-phase reclosers will be installed.
- In 2025, full circuit trimming will be performed.

## 17 Circuit 45302 -- WEST BERWICK 53-02

### Performance Analysis

The WEST BERWICK 53-02 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 63 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (41); equipment failure (11); nothing found (5); animal contacts (4); other (1); vehicles (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 2022, a section of difficult-to-access conductor will be relocated.
- In 2022, additional single-phase ties will be evaluated.
- In 2023, a section of difficult-to-access conductor will be relocated.

18 Circuit 56504 -- ROCKVILLE 65-04

## Performance Analysis

The ROCKVILLE 65-04 circuit experienced four outages of over 100,000 CMI between July 2021 and June 2022.

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 16-Jun-22, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 231 customers for up to 555 minutes resulting in 128,158 CMI.

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 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 139 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (94); animal contacts (19); equipment failure (18); other (4); vehicles (2); contact or dig in (1); nothing found (1).

## Remedial Actions

- In 2021, one fuse was installed.
- In 2021, a section of line was reconfigured.
- 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, additional fusing will be evaluated.
- In 2023, full circuit trimming will be performed.

- In 2023, hazard tree removal will be performed.
- In 2023, two single-phase reclosers will be installed and the circuit protection settings will be optimized.

#### 19 Circuit 18001 -- ZIONSVILLE 80-01

##### Performance Analysis

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

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.

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.

In total, the ZIONSVILLE 80-01 circuit had 40 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (30); animal contacts (5); equipment failure (2); vehicles (2); other (1).

##### Remedial Actions

- In 2021, an additional single-phase recloser was installed.
- In 2022, hot spot trimming was performed.
- In 2022, additional fusing was installed.
- In 2022, two additional single-phase reclosers were installed with more to be evaluated.
- In 2022, an additional Smart Grid device will be evaluated.
- In 2022, additional animal guarding will be installed.
- In 2022, relocation will be evaluated for a pole with high vehicle strike vulnerability.
- In 2023, full circuit trimming will be performed.

#### 20 Circuit 21901 -- HUMBOLDT 19-01

##### Performance Analysis

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

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 11-Jan-22, during a period of extreme temperatures, a vehicle contact caused an interruption. This outage affected 2,600 customers for up to 563 minutes resulting in 154,841 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 103 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (73); equipment failure (14); animal contacts (9); other (3); vehicles (3); nothing found (1).

#### Remedial Actions

- In 2021, full circuit trimming was performed, as well as removal of over 1,000 hazard trees.
- In 2022, 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.

21 Circuit 45602 -- WOOLRICH 56-02

#### Performance Analysis

The WOOLRICH 56-02 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 63 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (45); equipment failure (9); animal contacts (4); nothing found (4); vehicles (1).

#### Remedial Actions

- In 2021, additional animal guarding was installed, with more to be done in 2022.
- In 2022, a section of conductor was relocated to underground.
- In 2022, additional fusing will be installed.
- In 2022, additional hazard tree removal will be performed.
- In 2023, two single-phase reclosers will be installed.

## 22 Circuit 52402 -- GREEN PARK 24-02

### Performance Analysis

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

On 9-Jun-22, during a period of heavy rain, a tree contacted an overhead conductor causing a load break fuse to operate. This outage affected 1,158 customers for up to 267 minutes resulting in 113,664 CMI.

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

### Remedial Actions

- In 2021, a section of single-phase was relocated.
- In 2021, 215 hazard trees were removed.
- In 2021, expanded trimming right-of-way was obtained for sections of this circuit.
- In 2021, a section of single-phase was relocated to underground.
- In 2021, one section of single-phase was reconductored.
- In 2022, full circuit trimming was performed.
- In 2022, two additional single-phase reclosers were installed.
- In 2022, a section of single-phase was relocated.
- In 2022, additional animal guarding will be installed.
- In 2022, a new battery storage installation will be installed.
- 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 2023, three single-phase reclosers will be installed.
- In 2024, a substation conversion will be performed.
- In 2024, several sections of single-phase will be storm hardened.

## 23 Circuit 54701 -- NEW BLOOMFIELD 47-01

### Performance Analysis

The NEW BLOOMFIELD 47-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 2022.

On 16-Jun-22, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 111 customers for up to 1,651 minutes resulting in 159,381 CMI.

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

### Remedial Actions

- In 2021, hazard tree removal was performed.
- In 2022, one additional fuse was installed with two more to be installed this year.
- In 2022, five single-phase reclosers were installed.
- In 2022, hazard tree removal was performed.
- In 2022, a section of single-phase will be evaluated for relocation.
- In 2022, a section of single-phase will be evaluated for reconfiguration.
- In 2022, four additional fuses will be evaluated.
- In 2022, a single-phase tie will be evaluated.
- In 2022, an additional sectionalizing device will be installed.
- In 2023, two sections of single-phase will be relocated underground.

## 24 Circuit 22404 -- MORGAN 24-04

### Performance Analysis

The MORGAN 24-04 circuit experienced one outage of over 100,000 CMI between July 2021 and June 2022.

On 25-May-22, an equipment failure occurred causing a circuit breaker to trip to lockout. This outage affected 1,810 customers for up to 211 minutes resulting in 256,847 CMI.

In total, the MORGAN 24-04 circuit had 21 outages between July 2021 and June 2022, with the causes breaking down as follows: equipment failure (12); animal contacts (6); vehicles (2); tree related (1).

### Remedial Actions

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

- In 2024, full circuit trimming will be performed.

## 25 Circuit 20402 -- ASHFIELD 04-02

### Performance Analysis

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

On 28-Nov-21, a tree felled by the public contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 1,209 customers for up to 258 minutes resulting in 151,517 CMI.

On 12-Jun-22, a vehicle contacted a pole causing a circuit breaker to trip to lockout. This outage affected 1,411 customers for up to 687 minutes resulting in 291,290 CMI.

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

### Remedial Actions

- In 2022, a section of difficult-to-access conductor was relocated.
- In 2022, a section of underground conductor was extended.
- In 2022, a large section of single-phase will be rebuilt as three-phase and relocated to a more accessible location.
- In 2022, two additional single-phase reclosers will be installed, with additional downstream fusing.
- In 2022, a new tie line will be evaluated.
- In 2022, an additional Smart Grid device will be evaluated.
- In 2022, two sections of difficult-to-access single-phase will be evaluated for relocation.

## 26 Circuit 26001 -- WEST DAMASCUS 60-01

### Performance Analysis

The WEST DAMASCUS 60-01 circuit experienced two outages of over 100,000 CMI between July 2021 and June 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 90 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (49); equipment failure (20); animal contacts (12); nothing found (6); vehicles (2); other (1).

#### Remedial Actions

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

#### 27 Circuit 56501 -- ROCKVILLE 65-01

#### Performance Analysis

The ROCKVILLE 65-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 50 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (28); animal contacts (10); equipment failure (6); nothing found (2); vehicles (2); contact or dig in (1); other (1).

#### Remedial Actions

- In 2021, a section of single-phase was reconductored.
- In 2021, a section of line was re-sourced.
- In 2021, a single-phase tie was installed.
- In 2021, four single-phase reclosers were installed.
- In 2022, 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 2022, two new fuses will be installed.

- 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.

## 28 Circuit 51104 -- CARLISLE 11-04

### Performance Analysis

The CARLISLE 11-04 circuit experienced one outage of over 100,000 CMI between July 2021 and June 2022.

On 17-May-22, during a period of strong wind, a tree contacted an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,756 customers for up to 405 minutes resulting in 573,850 CMI.

In total, the CARLISLE 11-04 circuit had 9 outages between July 2021 and June 2022, with the causes breaking down as follows: animal contacts (4); tree related (3); other (1); vehicles (1).

### Remedial Actions

- In 2021, three fuses were installed.
- In 2022, one fuse was installed.
- In 2022, one fuse will be installed.
- In 2022, two new tie lines will be evaluated.

## 29 Circuit 56802 -- BENVENUE 68-02

### Performance Analysis

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

On 16-Jun-22, during a period of lightning, an unidentified issue occurred with a pole or pole arm causing a recloser to trip to lockout. This outage affected 456 customers for up to 1,101 minutes resulting in 501,805 CMI.

In total, the BENVENUE 68-02 circuit had 94 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (60); equipment failure (20); animal contacts (7); nothing found (3); other (3); vehicles (1).

### Remedial Actions

- In 2021, a single-phase recloser was installed.
- In 2022, additional fusing will be installed.
- In 2022, a section of single-phase was relocated and reconfigured.
- In 2022, two single-phase reclosers were installed.
- In 2022, a single-phase tie line will be evaluated.

- In 2022, relocation for a section of three-phase conductor will be evaluated.
- In 2023, full circuit trimming will be performed.
- In 2023, a section of single-phase will be relocated to underground.

### 30 Circuit 27102 -- GREENFIELD 71-02

#### Performance Analysis

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

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

#### Remedial Actions

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

### 31 Circuit 64201 -- KINZER 42-01

#### Performance Analysis

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

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.

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.

In total, the KINZER 42-01 circuit had 34 outages between July 2021 and June 2022, with the causes breaking down as follows: equipment failure (16); tree related (8); vehicles (7); nothing found (2); animal contacts (1).

## Remedial Actions

- In 2021, an existing recloser was upgraded to a Smart Grid device.
- In 2021, a proactive circuit analysis was conducted with several minor remediations performed.
- In 2022, an existing tie switch was replaced with a Smart Grid device.
- In 2022, additional animal guarding was installed.
- In 2022, four fuses will be installed.
- In 2022, a three-phase tie will be evaluated.
- In 2022, a three-phase sectionalizing device will be evaluated.
- In 2022 a single-phase tie will be evaluated.
- In 2022, several poles will be evaluated for relocation.
- In 2023, an additional three-phase sectionalizing device will be evaluated.

## 32 Circuit 55002 -- NEWPORT 50-02

### Performance Analysis

The NEWPORT 50-02 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 44 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (26); equipment failure (8); animal contacts (6); vehicles (3); nothing found (1).

### Remedial Actions

- In 2021, a section of single-phase was reconnected.
- In 2022, a single-phase recloser was installed.
- In 2022, an additional animal guard was installed.
- In 2022, a section of three-phase was inspected by drone, and multiple remediations will be completed in 2022.
- In 2022, an additional three-phase sectionalizing device will be evaluated.
- In 2022, two single-phase ties will be evaluated.
- In 2022, a three-phase tie line will be evaluated.
- In 2023, full circuit trimming will be performed.

### 33 Circuit 59101 -- WALKER 91-01

#### Performance Analysis

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

On 25-May-22, an unidentified issue occurred with an underground conductor causing a recloser to trip to lockout. This outage affected 1,135 customers for up to 133 minutes resulting in 150,841 CMI.

On 12-Jan-22, during a period of extreme temperatures, an equipment failure occurred causing an interruption. This outage affected 1,132 customers for up to 136 minutes resulting in 142,913 CMI.

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

#### Remedial Actions

- In 2021, a fuse was installed.
- In 2022, a section of difficult-to-access conductor was relocated.
- In 2022 a targeted infrared patrol was performed. A minor anomaly was identified and corrected.
- In 2022, two animal guards will be installed.
- In 2022, two fuses will be installed.
- In 2022, a new three-phase recloser will be installed.

### 34 Circuit 43201 -- MILLVILLE 32-01

#### Performance Analysis

The MILLVILLE 32-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 2022.

On 18-Jun-22, during a period of strong wind, a tree contacted an overhead conductor causing a recloser to trip to lockout. This outage affected 262 customers for up to 510 minutes resulting in 102,081 CMI.

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

### Remedial Actions

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

### 35 Circuit 10601 -- BLOOMING GLEN 06-01

#### Performance Analysis

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

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

#### Remedial Actions

- In 2022, additional fusing was installed at seven locations with more to be performed.
- In 2022, two single-phase reclosers were installed.
- 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 2022, additional animal guarding will be installed.
- In 2023, an additional single-phase recloser will be installed.

### 36 Circuit 45902 -- AUBURN 59-02

#### Performance Analysis

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

In total, the AUBURN 59-02 circuit had 77 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (50); animal contacts (12); equipment failure (10); nothing found (4); other (1).

### Remedial Actions

- In 2021, additional fusing was installed with more to be done in 2022.
- In 2022, additional hazard tree removal was performed.
- In 2022, nine single-phase reclosers will be installed.
- In 2022, three sections of difficult-to-access conductor will be relocated.
- In 2023, full circuit trimming will be performed.

37 Circuit 45002 -- LIMESTONE 50-02

### Performance Analysis

The LIMESTONE 50-02 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 61 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (37); equipment failure (16); 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, additional animal guarding was installed.
- In 2022, a section of difficult-to-access single-phase was relocated.
- In 2022, additional fusing will be installed.
- In 2022, several poles will be replaced.
- In 2023, multiple porcelain cutouts will be replaced.
- In 2024, aerial cable will be installed on a section of this circuit.

38 Circuit 46506 -- LOCK HAVEN 65-06

### Performance Analysis

The LOCK HAVEN 65-06 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 59 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (41); equipment failure (12); animal contacts (5); nothing found (1).

### Remedial Actions

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

### 39 Circuit 59301 -- MC ALISTERVILLE 93-01

#### Performance Analysis

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

On 1-Jun-22, during a period of lightning, an equipment failure occurred causing a motor operated switch to be interrupted. This outage affected 1,207 customers for up to 221 minutes resulting in 170,897 CMI.

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

#### Remedial Actions

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

### 40 Circuit 53901 -- HALIFAX 39-01

#### Performance Analysis

The HALIFAX 39-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 54 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (33); equipment failure (13); animal contacts (3); vehicles (3); nothing found (1); other (1).

#### Remedial Actions

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

41 Circuit 10904 -- COOPERSBURG 09-04

#### Performance Analysis

The COOPERSBURG 09-04 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 126 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (83); animal contacts (20); equipment failure (16); nothing found (7).

#### Remedial Actions

- In 2021, full circuit trimming was performed.
- In 2022, three additional single-phase reclosers were installed with one more to be installed this year.
- 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.

42 Circuit 61801 -- E ELIZABETHTOWN 18-01

#### Performance Analysis

The E ELIZABETHTOWN 18-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 49 outages between July 2021 and June 2022, with the causes breaking down as follows: equipment failure (20); tree related (16); animal contacts (6); vehicles (4); 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, a section of a single-phase will be reconfigured.
- In 2024, full circuit trimming will be performed.
- In 2024, a three-phase sectionalizing device will be installed.

43 Circuit 53601 -- DALMATIA 36-01

#### Performance Analysis

The DALMATIA 36-01 circuit experienced two outages of over 100,000 CMI between July 2021 and June 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 54 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (20); equipment failure (15); animal contacts (8); nothing found (8); contact or dig in (1); other (1); vehicles (1).

#### Remedial Actions

- In 2021, a section of single-phase line was relocated.
- In 2022, a three-phase tie will be evaluated.
- In 2022, additional fusing will be installed.
- In 2022, seventeen additional fuses will be evaluated.
- In 2022, a section of single-phase will be evaluated for resourcing.
- In 2022, a three-phase device will be evaluated for upgrade.
- In 2022, extended rail guard will be requested in a high pole hit area.
- In 2022, a section of three-phase will be evaluated for reconductoring.
  
- In 2022, a single-phase recloser will be evaluated for relocation.
- In 2022, three single-phase reclosers will be evaluated.

## 44 Circuit 24401 -- TINKER 44-01

### Performance Analysis

The TINKER 44-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 2022.

On 19-May-22, an unidentified issue occurred with an overhead conductor causing a circuit breaker to trip to lockout. This outage affected 1,269 customers for up to 344 minutes resulting in 120,309 CMI.

In total, the TINKER 44-01 circuit had 64 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (31); animal contacts (16); equipment failure (9); nothing found (5); other (2); vehicles (1).

### Remedial Actions

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

## 45 Circuit 54202 -- PENNSBORO 42-02

### Performance Analysis

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

On 1-Jun-22, during a period of heavy rain, an unidentified issue occurred with a pole or pole arm causing a recloser to trip to lockout. This outage affected 505 customers for up to 762 minutes resulting in 127,086 CMI.

On 6-Feb-22, a vehicle contacted a pole causing a recloser to trip to lockout. This outage affected 1,357 customers for up to 575 minutes resulting in 224,792 CMI.

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

### Remedial Actions

- In 2021, an additional animal guard was installed.
- In 2022, a three-phase sectionalizing device will be evaluated.
- In 2022, settings on a three-phase device will be optimized for coordination.

- In 2022, a section of single-phase will be evaluated for reconfiguration.
- In 2023, a single-phase fuse will be installed.
- In 2023, full circuit trimming will be performed.

#### 46 Circuit 21206 -- EAST CARBONDALE 12-06

##### Performance Analysis

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

On 16-May-22, a vehicle contacted a pole causing an interruption. This outage affected 492 customers for up to 517 minutes resulting in 120,081 CMI.

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 27 outages between July 2021 and June 2022, with the causes breaking down as follows: animal contacts (8); tree related (8); equipment failure (6); other (3); vehicles (2).

##### Remedial Actions

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

#### 47 Circuit 42401 -- GIRARD MANOR 24-01

##### Performance Analysis

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

In total, the GIRARD MANOR 24-01 circuit had 59 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (43); equipment failure (6); animal contacts (5); 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 to the HUMBOLDT 19-01.
- In 2022, additional single-phase fusing will be installed at six locations.
- In 2022, a damaged pole will be replaced.

48 Circuit 13503 -- MC MICHAELS 35-03

## Performance Analysis

The MC MICHAELS 35-03 circuit experienced no outages of over 100,000 CMI between July 2021 and June 2022.

In total, the MC MICHAELS 35-03 circuit had 33 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (19); equipment failure (10); animal contacts (2); other (1); vehicles (1).

## Remedial Actions

- In 2022, full circuit trimming will be performed.
- In 2022, additional animal guarding will be installed.
- In 2022, numerous porcelain cutouts will be replaced.
- In 2022, the protection settings on this circuit will be optimized.
- In 2023, two single-phase reclosers will be installed.

49 Circuit 25801 -- SULLIVAN TRAIL 58-01

## Performance Analysis

The SULLIVAN TRAIL 58-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 75 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (50); equipment failure (13); animal contacts (6); nothing found (2); other (2); contact or dig in (1); vehicles (1).

### Remedial Actions

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

50 Circuit 29501 -- LEDGEDALE 95-01

### Performance Analysis

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

In total, the LEDGEDALE 95-01 circuit had 67 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (29); animal contacts (21); equipment failure (11); nothing found (5); vehicles (1).

### 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, a single-phase recloser was 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.
- In 2023, an additional single-phase recloser will be installed.

51 Circuit 43401 -- BENTON 34-01

### Performance Analysis

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

In total, the BENTON 34-01 circuit had 69 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (53); equipment failure (6); nothing found (5); animal contacts (4); 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.

52 Circuit 64304 -- LINCOLN 43-04

### Performance Analysis

The LINCOLN 43-04 circuit experienced no outages of over 100,000 CMI between July 2021 and June 2022.

In total, the LINCOLN 43-04 circuit had 35 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (13); animal contacts (9); equipment failure (8); vehicles (3); nothing found (2).

### Remedial Actions

- In 2021, three single-phase reclosers were installed.
- In 2021, one fuse was installed.
- In 2021, full circuit trimming was performed.
- In 2021, a proactive circuit analysis was performed with several minor remediations implemented.
- In 2022, a section of single-phase was resourced.
- In 2022, a fuse was installed.
- In 2022, a three-phase recloser will be installed.
- In 2022, five additional single-phase reclosers will be installed.
- In 2022, two additional fuses will be evaluated.
- In 2022, a single-phase recloser installation will be evaluated.
- In 2023, an additional section of single-phase will be resourced.
- In 2023, a single-phase recloser will be installed.

53 Circuit 42701 -- AUGUSTAVILLE 27-01

### Performance Analysis

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

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

#### Remedial Actions

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

54 Circuit 16801 -- WAGNERS 68-01

#### Performance Analysis

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

On 18-Oct-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 727 customers for up to 421 minutes resulting in 127,530 CMI.

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

#### Remedial Actions

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

55 Circuit 46302 -- ROHRSBURG 63-02

#### Performance Analysis

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

In total, the ROHRSBURG 63-02 circuit had 99 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (64); animal contacts (22); 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.
- In 2022, a section of difficult-to-access conductor was relocated.
- 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.

56 Circuit 41602 -- CLEVELAND 16-02

### Performance Analysis

The CLEVELAND 16-02 circuit experienced no outages of over 100,000 CMI between July 2021 and June 2022.

In total, the CLEVELAND 16-02 circuit had 83 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (59); animal contacts (10); equipment failure (8); nothing found (5); vehicles (1).

### Remedial Actions

- In 2022, tree trimming will be performed.
- In 2022, a section of difficult-to-access conductor will be relocated.
- In 2024, a section of overhead conductor will be undergrounded.

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

### Performance Analysis

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

On 3-Feb-22, during a period of ice/sleet/snow, an equipment failure occurred on an underground conductor causing a circuit breaker to trip to lockout. This outage affected 450 customers for up to 641 minutes resulting in 157,476 CMI.

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

### Remedial Actions

- In 2021, two additional animal guards were installed.
- In 2023, one additional fuse will be installed.
- In 2022, a new three-phase sectionalizing device will be evaluated.
- In 2022, proactive testing/replacement of the three-phase underground backbone will be evaluated.

58 Circuit 46504 -- LOCK HAVEN 65-04

### Performance Analysis

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

In total, the LOCK HAVEN 65-04 circuit had 62 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (47); animal contacts (6); equipment failure (6); other (2); nothing found (1).

### Remedial Actions

- In 2021, additional animal guarding was installed.
- In 2022, additional animal guarding was installed.
- In 2022, several porcelain cutouts were replaced.
- 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.

59 Circuit 40901 -- JERSEY SHORE 09-01

### Performance Analysis

The JERSEY SHORE 09-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 64 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (47); equipment failure (9); animal contacts (4); nothing found (3); contact or dig in (1).

## 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 three-phase section of this line was transferred to an adjacent circuit.
- In 2022, additional fusing was installed.
- In 2022, several porcelain cutouts were replaced.
- In 2022, a transformer cutout will be replaced.
- In 2023, additional fusing will be installed.
- In 2023, full circuit trimming will be performed.

60 Circuit 29503 -- LEDGEDALE 95-01

## Performance Analysis

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

On 7-Jul-21, during a period of heavy rain, an equipment failure occurred 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 36 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (21); equipment failure (7); animal contacts (6); nothing found (2).

## 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, a section of underground conductor will be replaced.
- In 2022, an existing pole will be replaced.
- In 2023, a single-phase reclosers with downstream fusing will be installed.
- In 2023, full circuit trimming will be performed.

61 Circuit 16402 -- MOUNT POCONO 64-02

## Performance Analysis

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

In total, the MOUNT POCONO 64-02 circuit had 72 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (43); animal contacts (14); equipment failure (8); 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, hazard tree removal will be performed.
- In 2022, additional fusing will be installed.
- In 2022, three single-phase reclosers were installed with one more to be done in 2022.
- In 2022, a section of difficult-to-access single-phase was relocated.
- In 2022, an existing recloser will be replaced.
- In 2022, additional animal guarding will be installed.
- In 2022, several poles will be replaced.
- In 2022, the protection settings for this circuit will be optimized.

62 Circuit 27004 -- BELLMONT 70-04

## Performance Analysis

The BELLMONT 70-04 circuit experienced one outage of over 100,000 CMI between July 2021 and June 2022.

On 18-Sep-21, a vehicle contacted a pole causing an interruption. This outage affected 866 customers for up to 865 minutes resulting in 248,146 CMI.

In total, the BELLMONT 70-04 circuit had 17 outages between July 2021 and June 2022, with the causes breaking down as follows: equipment failure (8); animal contacts (5); vehicles (2); other (1); tree related (1).

## Remedial Actions

- In 2022, additional animal guarding was installed with more being evaluated.
- In 2022, several equipment replacements will be evaluated.
- In 2024, a section of this circuit will be transferred to an adjacent circuit.

## 63 Circuit 16101 -- BINGEN 61-01

### Performance Analysis

The BINGEN 61-01 circuit experienced one outage of over 100,000 CMI between July 2021 and June 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 75 outages between July 2021 and June 2022, with the causes breaking down as follows: tree related (47); animal contacts (12); equipment failure (11); 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.

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
<b>Animals</b>	4,271	16.2%	56,195	4.1%	3,986,514	1.5%
<b>Contact / Dig-In</b>	162	0.6%	10,872	0.8%	737,748	0.3%
<b>Directed by Non-PPL Authority</b>	61	0.2%	6,008	0.4%	434,259	0.2%
<b>Equipment Failures</b>	6,001	22.7%	319,424	23.1%	36,658,461	13.9%
<b>Improper Design</b>	1	0.0%	759	0.1%	15,901	0.0%
<b>Improper Installation</b>	1	0.0%	50	0.0%	5,291	0.0%
<b>Improper Operation</b>	5	0.0%	2,336	0.2%	59,064	0.0%
<b>Nothing Found</b>	1,112	4.2%	75,534	5.5%	7,970,644	3.0%
<b>Other Controllable</b>	77	0.3%	8,296	0.6%	853,155	0.3%
<b>Other Non Control</b>	229	0.9%	22,902	1.7%	3,051,806	1.2%
<b>Other Public</b>	29	0.1%	5,985	0.4%	664,773	0.3%
<b>Tree Related</b>	13,644	51.6%	737,383	53.3%	194,160,927	73.4%
<b>Unknown</b>	-	0.0%	-	0.0%	-	0.0%
<b>Vehicles</b>	836	3.2%	137,869	10.0%	15,919,488	6.0%
<b>Total</b>	26,429	100.0%	1,383,613	100.0%	264,518,029	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 57% of cases, 62% of customer interruptions, and 93% 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 93% of the customer minutes attributed to tree related outages were weather-related.

**Animals:** Animals accounted for approximately 16% of PPL Electric's cases of trouble. Although this represents a significant number of cases, the effect on SAIFI and CAIDI is small because approximately 74% of the number of cases of trouble were associated with individual distribution transformers. However, when animal contacts affect substation equipment, the effect may be widespread and potentially can interrupt thousands of customers on multiple circuits. In addition to guarding new distribution transformers and substations, PPL Electric initiated distribution and substation animal guarding programs in 2009 to focus systematically on protecting existing facilities most at risk of incurring animal-caused interruptions. A complete effectiveness review of this strategy is being evaluated.

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

**Equipment Failure:** Equipment failure is one of the largest single contributors to the number of cases of trouble, customer interruptions and customer minutes. However, approximately 41% of the cases of trouble, 45% of the customer interruptions and 56% of the customer minutes attributed to equipment failure were weather-related and, as such, are not considered to be strong indicators of equipment condition or performance.

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

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

Inspection & Maintenance Goals/Objectives	Annual Budget	2nd Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
<b>Transmission</b>					
Transmission C-tag poles (# of poles)	61	14	14	19	19
Transmission arm replacements (# of arms)	36	3	3	6	6
Transmission air break switch inspections (# of switches)	1	0	0	0	0
Transmission surge arrester installations (# of sets)	581	230	230	256	256
Transmission structure inspections (# of activities)	15,988	2,542	2,542	4,522	4,522
Transmission tree side trim-Bulk Power (linear feet)	N/A				
Transmission herbicide-Bulk Power (# of acres)	N/A				
Transmission reclearing (# of miles) BES Only	901	830	415	901	826
Transmission reclearing (# of miles) 69 kV	1,651	614	600	1,007	1,214
Transmission reclearing (# of miles) 138 kV	57	20	31	40	57
Transmission danger tree removals-Bulk Power (# of trees)	N/A	500	772	500	772
<b>Substation</b>					
Substation batteries (# of activities)	386	23	18	331	331
Circuit breakers (# of activities)	423	13	12	15	12
Substation inspections (# of activities)	1,861	356	357	1,079	1,079
Transformer maintenance (# of activities)	126	35	54	59	59

Inspection & Maintenance Goals/Objectives	Annual Budget	1st Quarter		Year-to-date	
		Budget	Actual	Budget	Actual
<b>Distribution</b>					
Distribution C-tag poles replaced (# of poles)	1,238	310	777	619	1,194
C-truss distribution poles (# of poles)	3,888	350	272	350	243
Capacitor (MVAR added)	N/A			5.8	5.8
OCR Replacements (# of)	0	0	0	0	2
Distribution pole inspections (# of poles)	69,900	13,000	13,290	18,870	21,188
Distribution line inspections (miles)	3,288	396	396	396	396
Group re-lamping (# of lamps)	24,100	0	0	12,050	0
Test sections of underground distribution cable	N/A			112	112
Distribution tree trimming (# of miles)	5,261	1174	1137	2272	2260
Distribution herbicide (# of acres)	N/A				706
Distribution >18" removals within R/W (# of trees)	N/A				1965
Distribution hazard tree removals outside R/W (# of trees)	N/A				
LTN manhole inspections (# of)	387	29	6	58	163
LTN vault inspections (# of)	299	95	6	190	105
LTN network protector overhauls (# of)	60	3	2	6	17
LTN reverse power trip testing (# of)	25	4	0	8	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	2nd Quarter			Year-to-date	
	2022 Budget (000s)	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
Provide Electric Service	5,799	1,356	2,483	2,667	4,536
Vegetation Management	33,292	9,568	9,332	18,471	19,952
Customer Response	60,906	17,127	15,562	29,573	40,155
Reliability Maintenance	21,217	5,730	7,042	11,765	15,433
System Upgrade	3,870	1,013	202	1,986	397
Customer Service/Accounts	109,576	22,479	29,856	49,439	64,208
Others	63,970	15,707	11,653	31,883	31,315
<b>Total O&amp;M Expenses</b>	<b>298,629</b>	<b>72,980</b>	<b>76,128</b>	<b>145,784</b>	<b>175,997</b>

- 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.*

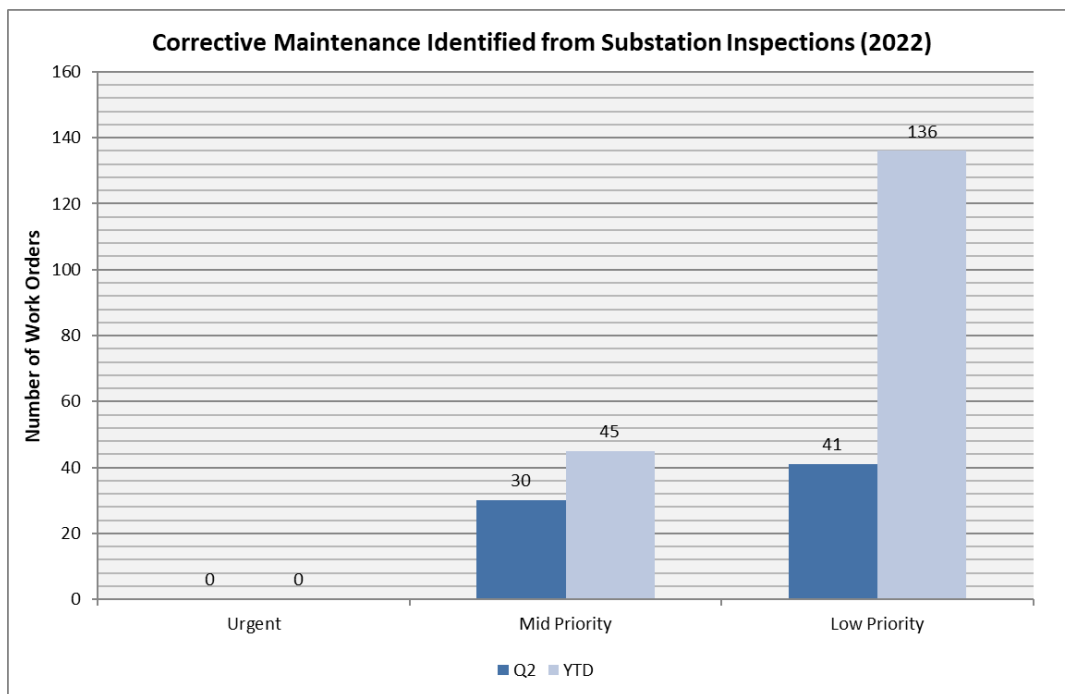
The following table provides the capital expenditures for PPL Electric which includes transmission and distribution (“T&D”) activities.

Activity	2 <sup>nd</sup> Quarter			Year-to-date	
	2022 Budget (000s)	Budget (\$000)	Actual (\$000)	Budget (\$000)	Actual (\$000)
New Service/Revenue	92,169	22,132	32,075	44,761	62,131
System Upgrade	205,389	59,736	55,103	122,280	103,548
Reliability & Maintenance	500,801	152,865	129,123	276,522	250,948
Customer Response	34,262	10,928	9,031	17,748	26,604
Other	27,172	5,746	4,224	13,837	11,296
<b>Total</b>	<b>859,793</b>	<b>251,406</b>	<b>229,557</b>	<b>475,149</b>	<b>454,526</b>

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 2<sup>nd</sup> quarter of 2022, 71 corrective work orders were created with the following breakdown by priority.



**Figure 1: Corrective Maintenance Work Orders by Priority Level for 2<sup>nd</sup> Quarter and Year-to-Date 2022**

**(b) The Amount Spent on Substation Inspections**

During the 2<sup>nd</sup> quarter of 2022, PPL Electric Utilities spent approximately \$135,000 on substation inspections.

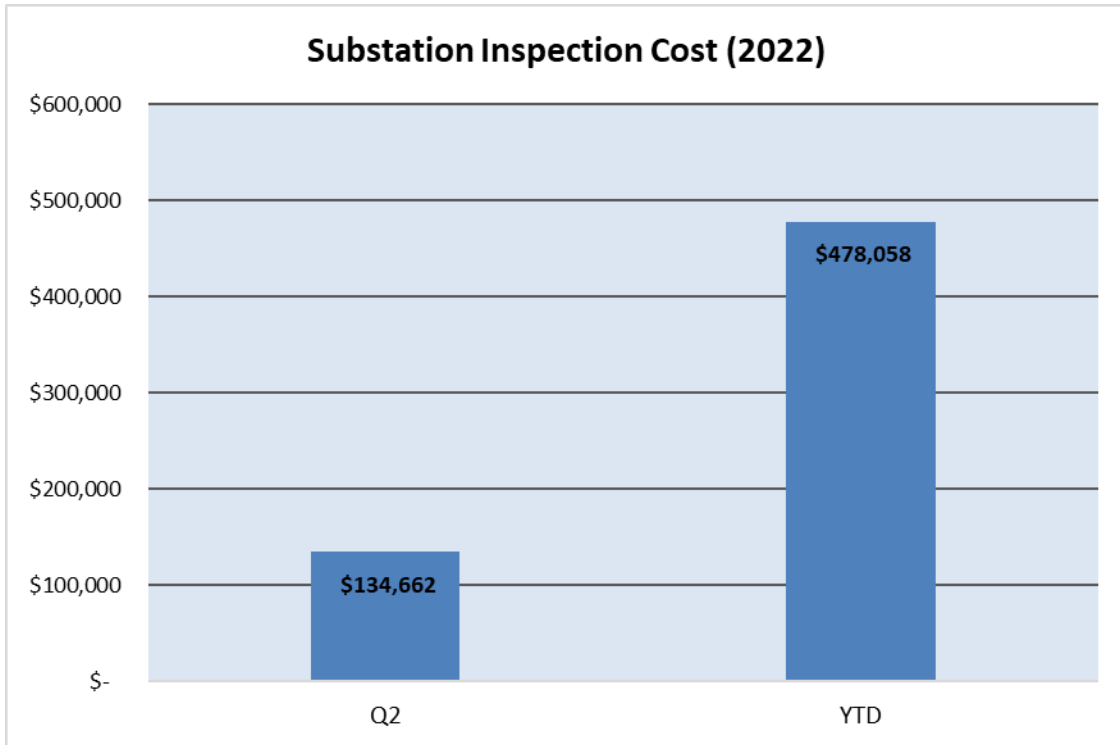


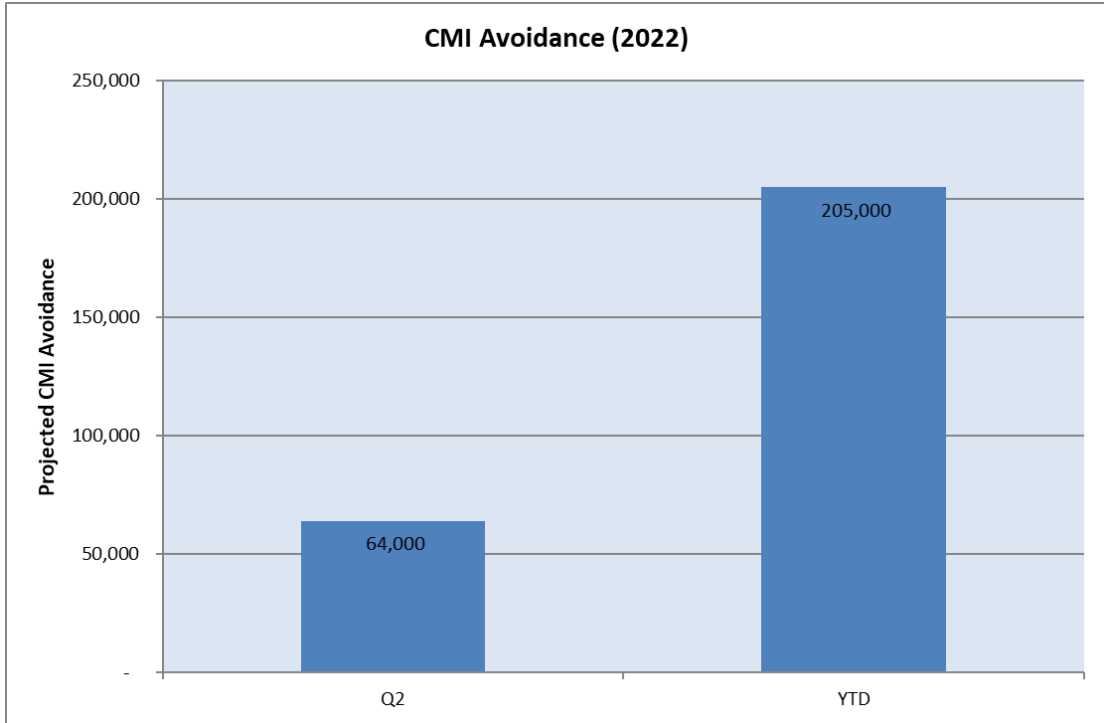
Figure 2: Substation Inspection Costs for 2<sup>nd</sup> Quarter and Year-to-Date 2022

**(c) The Amount Spent on Vegetation Management**

Please refer to Section 7 for vegetation management expenses for the 2<sup>nd</sup> quarter and year-to-date in 2022.

**(d) The Projected CMI Avoidance Due to Substation Inspections**

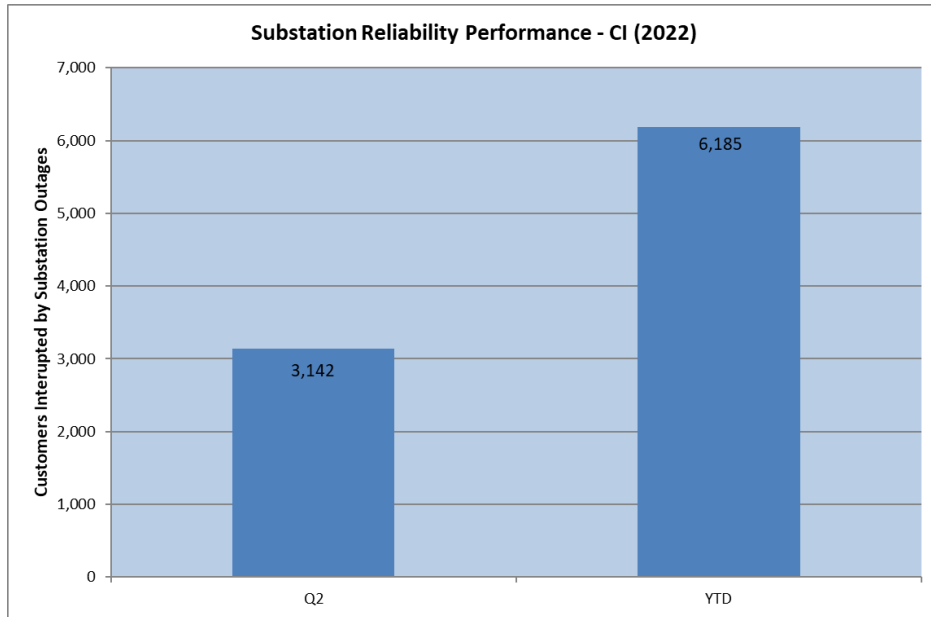
Figure 3 below shows the CMI avoidance that PPL Electric Utilities has estimated for the 2<sup>nd</sup> quarter and year-to-date. During the 2<sup>nd</sup> quarter of 2022, PPL Electric Utilities avoided a projected 64,000 CMI.



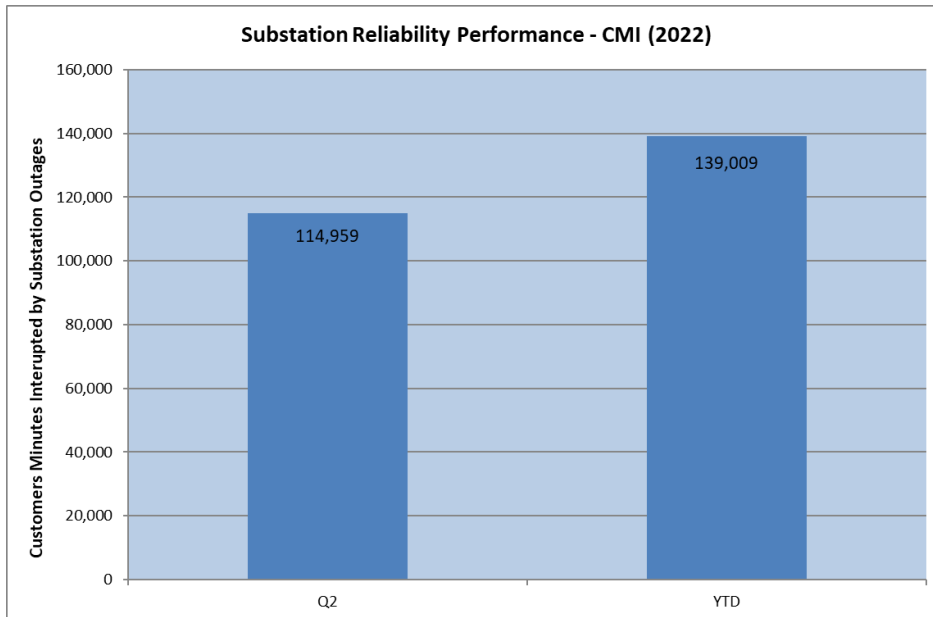
**Figure 3: Projected CMI Avoidance Due to Substation Inspections for 2<sup>nd</sup> Quarter and Year-to-Date 2022**

**(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 2<sup>nd</sup> quarter of 2022, the Company interrupted approximately 3,000 customers for a total of 115,000 CMI. The figures below show these results for the number of customers interrupted and CMI experienced, respectively.



**Figure 4: Substation Customers Interrupted for 2<sup>nd</sup> Quarter and Year-to-Date 2022**



**Figure 5: Substation Customer Minutes of Interruption for 2<sup>nd</sup> Quarter and Year-to-Date 2022**

#### **(f) Substation SAIFI Contribution**

Overall, substation outages contributed approximately 1.2% of the total SAIFI experienced by PPL Electric customers in the 2<sup>nd</sup> 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.

	<b>2<sup>nd</sup> Quarter</b>	<b>Year-to-Date</b>
Substations with Remote Monitoring	354	354
Total Number of Substations	356	356

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

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

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

<b>Transmission and Distribution</b>	
Lineman Leader	60
Journeyman Lineman	149
Journeyman Lineman-Trainee	42
Helper	38
Groundhand	0
Troubleman	51
<b>T&amp;D Total</b>	<b>340</b>
<b>Electrical</b>	
Elect Leaders-UG	2
Elect Leaders-Net	8
Elect Leaders-Sub	20
Journeyman Elect-UG	9
Journeyman Elect-Net	28
Journeyman Elect-Sub	47
<b>Electrical Total</b>	<b>114</b>
<b>Overall Total</b>	<b>454</b>

***PPL Electric Utilities Corporation***

***Worst Performing Circuit Definition***

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

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

***PPL Electric Utilities Corporation***

***Job Descriptions***

***Transmission and Distribution***

Groundhand	<ul style="list-style-type: none"><li>• Performs manual labor and assists employees in higher job classifications.</li></ul>
Helper	<ul style="list-style-type: none"><li>• 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.</li></ul>
Journeyman Lineman	<ul style="list-style-type: none"><li>• 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.</li></ul>
Journeyman Lineman-Trainee	<ul style="list-style-type: none"><li>• 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.</li></ul>
Lineman Leader	<ul style="list-style-type: none"><li>• 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.</li><li>• Engage in and perform work along with providing the necessary leadership, all-around knowledge, program, judgment, and experience to produce a quality job.</li><li>• Performs all the direct duties of the Journeyman Lineman when not acting as a Lineman Leader.</li></ul>
Troubleman	<ul style="list-style-type: none"><li>• Investigates and resolves trouble calls, voltage abnormalities on transmission and distribution systems associated with, but not limited to, PPL Electric facilities.</li></ul>

## Appendix B

### *Electrical*

Electrician Leader - Substation - Network - Underground	<ul style="list-style-type: none"><li>• 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.</li><li>• Engage in and perform work along with providing the necessary leadership, all-around knowledge, program, judgment, and experience to produce a quality job.</li><li>• Performs all direct duties of the Journeyman Electrician when not acting as a leader.</li></ul>
Helper - Substation - Network - Underground	<ul style="list-style-type: none"><li>• 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.</li></ul>
Laborer - Substation - Network - Underground	<ul style="list-style-type: none"><li>• Performs manual labor and assists employees in higher job classifications.</li></ul>
Journeyman Electrician - Substation - Network - Underground	<ul style="list-style-type: none"><li>• 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.</li><li>• Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the field services electrical discipline.</li></ul>

## Appendix B

<p>Journeyman Electrician - Trainee</p> <ul style="list-style-type: none"><li>- Substation</li><li>- Network</li><li>- Underground</li></ul>	<ul style="list-style-type: none"><li>• 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.</li><li>• Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the field services electrical discipline.</li></ul>
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